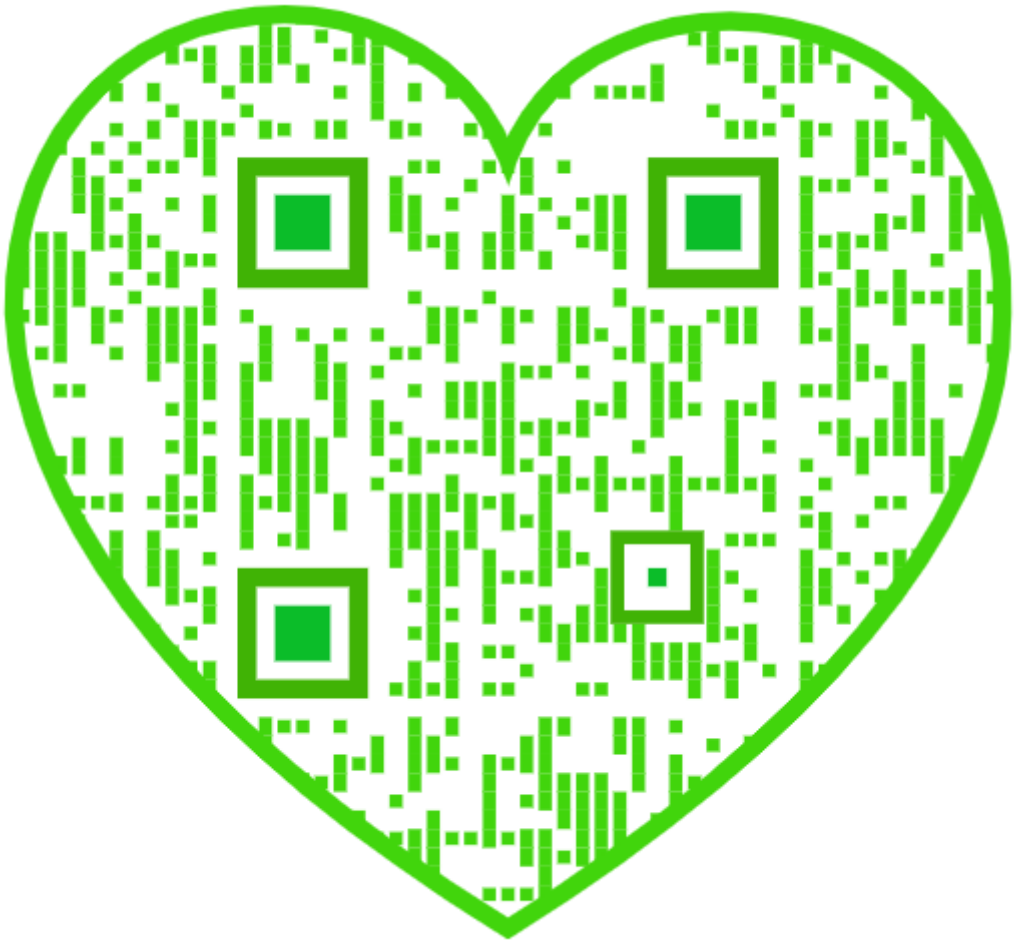

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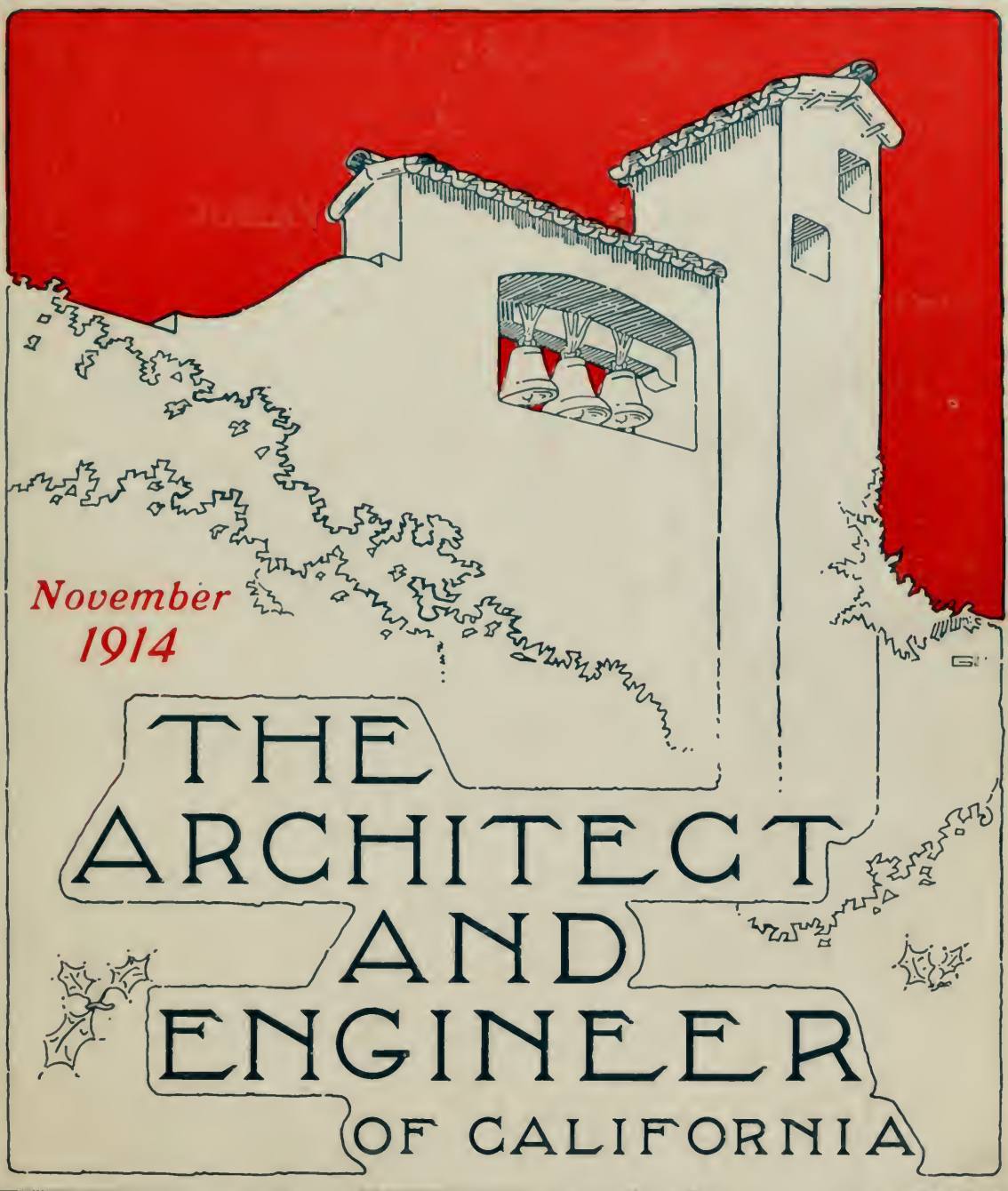

November
1914

THE ARCHITECT AND ENGINEER OF CALIFORNIA

PUBLISHED IN SAN FRANCISCO
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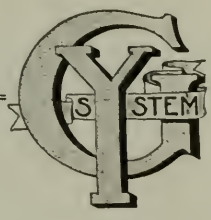
SPEED 

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ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see next page)

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Gladding, McBean & Company, Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Livermore Fire Brick Co., Livermore, Cal.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Steiger Terra Cotta & Pottery Works, Mills Bldg., San Francisco.
Thermos Brick Co., Monadnock Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

BRICK AND CEMENT COATING

Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
Biturine Company of America, 24 California St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Pacific Coast Agents.)
Glidden Products, sold by Whittier-Coburn Co., Howard and Beale Sts., San Francisco, and Tibbetts-Oldfield Co., 908 Swain St., Los Angeles.

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An Index to the Advertisements

	Page
American Concrete Co	159
American Heat & Power Co	25
American Keene Cement Co	19
American Mason Safety Tread	150
American Sheet & Tin Plate Co	21
American Steel Bar Co	33
Amweg, F. J	138
Armstrong Cork Co	158
Atlas Portland Cement Co	34
Austin Cube Mixer	36
Automatic Electric Heating Company	147
Bacon, Ed. R	135
Barrett & Hilp	162
Bass-Hueter Co	23
Bay Development Co	130
Bennett Bros	132
Biggers, A. W	156
Biturine Co	44
Boise Sandstone Co	145
Boscus, J. M	163
Bowser & Co., S. F	133
Braun, J. G	40
Breite, W. W	139
Brick Builders' Bureau	40
Brode Iron Works	41
Building Material Company, The, Inc	6
Bullis, E. A. & Co	26
Burdett-Rowntree Mfg. Co	18
Burlington Venetian Blind Co	150
Burnett Iron Works	15
Butte Engineering Co	127
Cabot, Samuel (Inc.)	31
Cacmentum Paint Co	151
Calif. Artistic Metal & Wire Co	14
California Bldg. Material Co.	Second Cover
California Granite Co	130
California Paving Brick Co	158
California Photo Engraving Co	163
California Plumbing Supply Co	43
California Tile Contracting Co	156
Central Electric Co	130
Central Iron Works	41
Chalmers, H. A	162
Chicago Pump Co	139
Chowen, W. A	163
Clinton Fireproofing Co	150
Coleman, Alex	146
Collins Studding	140
Collman & Collman	163
Colonial Fireplace Co	43
Concrete Appliances Co	2
Cook, H. N., Belting Co	36
Cowell Lime & Cement Co	154
Crane Co	43
Craycroft-Herrold Brick Co	141
Cutler Mail Chute Co	38
Dahlstrom Metallic Door Co	137
Decker Electrical Co	168
Denison Blocks	2d Cover
Diamond Brick Co	28
Dieckmann Hardwood Co	129
Dodge & Lathrop	166
Dolbear Curb Bar	33
Dudfield Lumber Co	153
Dyer Bros	39
Elevator Supply and Repair Co	15
Electric Agencies Co	149
Electric Utilities Co	156
Excello Mfg. Co	24
Ferguson, W. H	166
Fess System	151
Fibrestone and Roofing Co	11
Fidelity and Deposit Company of Maryland	166
Finch, Chas. M	154
Fink & Schindler Co., The	135
Fisher, M	163
Fitzpatrick, F. W	24
Flagg, Edwin H., Scenic Co	7
Forbes, A. J. & Son	154
Foster, Vogt Co	138
Fresno Art Glass Co	35
Fuller, W. P., Co	143
Gaspard & Hammond	10
Giant Suction Cleaner Co	22
Gladding, McBean & Co	29
Glidden Varnish Co	161
Globe Indemnity Co	159
Goheen Manufacturing Co	35
Graham & Jensen	162
Granite Press Brick Co	166
Grant Gravel Co	7
Gravity Spiral Chute Co	18
Hammond, M. E	151
Hardwood Interior Co	22
Hauser Reversible Window	154
Hausmann, L. M	162
Haws Sanitary Drinking Fountain	18
Heath & Milligan	144
Hillard, C. J., Co	42
Hoffman Heater	33
Holloway Expanded Metal Lath Co	142
Holmes Lime Co	9
Home Mfg. Co	138
Hunt, Robt. W. & Co	129
Hunter & Hudson	130
Imperial Waterproofing Co	24
Independent Sewer Pipe & Terra Cotta Co	159
Industrial Engineering Co	15
International Concrete Con. Co	37
Invincible Vacuum Cleaner	165
Jarvis, T. P	145
Jenkins Bros	153
Johnson, S. T., Co	12
Jorgensen & Co	39
Kinnear Rolling Doors	44
Knowles, A	36
LeDeit, Sylvain	149
Lithoid Products Co	43
Livermore Fire Brick Co	44
Los Angeles Pressed Brick Co	20
Lynch, A	162
Mackenzie Roof Co	139
MacMeans Co	166
Majestic Company	142
Mangrum & Otter	18
Marshall & Stearns Co	39
Massachusetts Bonding and Insurance Company	130
McCabe Hanger Co	138
McKibben & Taylor	149
McShane Bell Foundry	3
Medusa Portland Cement	6
Meek, T. H	159
Meese & Gottfried Co	Col. In. B
Merritt Ironing Board	42
Meurer Bros	157
Moller & Schumann Co	19
Monk, John	165
Monson Bros	162
Mortenson Construction Co	10
Mosaic Tile Co	163
Mott Iron Works	149
Municipal Engineering Co	36
Muralo Co	27
Musto-Keenan Co	12
Nason, R. N., & Co	13
Nathan, Dohrmann Co	146
National Lumber Co	4
National Roofing Co	14
Nelson, N. O	24
Niles Sand, Gravel & Rock Co	28
Noble, A. E	166
Norris Co., L. A.,	Inside Front Cover
Otis Elevator Co	Back Cover,
Otto, W. H	154
Owsley, Bert	149
Pacific Building Materials Co.	3d Cover
Pacific Coast Casualty Co	166
Pacific Fire Extinguisher Co	36
Pacific Gas & Electric Co	152
Pacific Gurney Elevator Co	138
Pacific Hardware and Steel Co.	Inside Front Cover
Pacific Imp. Co.,	Outside Back Cover
Pacific Portland Cement Co.	1st and 4th Cover
Pacific Rolling Mills	41
Pacific Structural Iron Works	159
Pacific Sewer Pipe Co	29
Palm Iron Works	42
Palmer, P. A	166
Paraffine Paint Co	17
Parrott & Co	140
Perfection Reversible Window Co	151
Petersen, H. L	9
Peterson-James Co	146
Petrovffsky, John	146
Phillips, Chas. T	166
Pitcher Door Hanger	4
Pittsburg Heater Co	148
Pneulectric Co	149
Pratt Building Material Co	128
Prometheus Electric Co	151
Ralston Iron Works	42
Ransome Concrete Co	130
Reliance Ball-Bearing Door Hanger	131
Riggs, Arthur T	139
Roberts Mfg Co	159
Rognier & Co	146
Roman, C	151
Russell & Erwin Mfg. Co	30
Samson Cordage Works	130
S. F. Metal Stamping and Corrugating Co	38
S. F. Elevator Co	162
S. F. Pioneer Varnish Works	23
Santa Fe Lumber Co	157
Sarsi, O. S	146
Schaer Bros	24
Schoenfeld Marble Co	154
Scott Co	138
Self Winding Clock Co	168
Shreiber & Sons Co	38
Sound Construction Co	138
Southern Pacific Co	158
Spencer Elevator Co	13
Standard Elec. Time Co.,	Insert A
Standard Varnish Works	147
Steiger Terra Cotta & Pottery Works	29
Sturgis, G. E	18
Sunset Lumber Company	157
Swan, Robert	146
Swedish Metal Co	154
Taylor & Co	138
Telephone Electric Equipment Co	24
Thayer & Co	141
Thermos Brick Co	5
Toplight Shade Co	4
Totten Planing Mill Co	159
Trussed Concrete Steel Co	160
Tuec Co	32
Tyrrel, Horace W	149
Tibbetts-Oldfield Co	161
Union Blind and Ladder Co	145
United Materials Co	20
U. S. Metal Products Co	167
U. S. Steel Products Co	155
Universal Safety Tread Co	29
Utility Gas Generator Co	18
Van Emon Elevator Co	1
Van Fleet, M. C	150
Vonnegut Hardware Co	23
Vulcan Iron Works	38
Wadsworth, Howland & Co	31
Waters, R. J	163
Weber, C. F. & Co	150
West Coast Wire & Iron Works	162
West, M. G	137
Western Brass Mf'g Co	146
Western Building and Engineer-Company	165
Western Builders' Supply Co	37
Western Iron Works	41
Western Pacific Co	164
Western Sculptors	165
Western States Porcelain Co	28
White Bros	126
White Steel Sanitary Co	11
Whitney Window Co	150
Whittier-Coburn Co	161
Williams Bros. & Henderson	157
Williams, H. S	163
Wittman, Lyman & Co	149
Wood Lumber Co	130
Woods & Huddart	145
Zelinsky, D	162

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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- Atlas Portland Cement Co., represented by United Materials Co. and Pacific Portland Cement Company, San Francisco.
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.
- "Golden Gate," manufactured by Pacific Portland Cement Co., Pacific Bldg., San Francisco.
- Medusa White Portland Cement, sold by Building Material Co., Inc., Monadnock Bldg., San Francisco.

CEMENT EXTERIOR WATERPROOF COATING
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See distributing Agents on page 32.)
- Bitumine Co., of America, 24 California St., San Francisco.
- "Impervite" sold by E. A. Bullis & Co. (See advertisement on page 26.)
- Concrete Cement Coating, manufactured by the Muralo Company. (See full-page advertisement, color insert.)
- Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
- Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

CEMENT EXTERIOR FINISH
- Bitumine Company of America, 24 California St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Glidden"s Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Dry Mortar Colors sold by E. A. Bullis & Co. (See advertisement, page 26.)
- Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.
- Concrete Cement Coating, manufactured by the Muralo Company. (See afull-page adverment, color insert.)
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Heath & Milligan Mfg. Co., 7-15 Fremont St., San Francisco.
- "Carbite" floor surfacing manufactured by E. A. Bullis & Co. (See advertisement, page 26.)
- Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.

CEMENT FLOOR COATING—Continued
- "Federal Steel Cement Hardener" manufactured by Federal Steel Cement Mills, Cleveland, represented by E. A. Bullis & Co. (See advertisement, page 26.)

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.

CHUTES—GRAVITY SPIRAL
- Gravity Spiral Chutes by Minnesota Manufacturers' Association. G. E. Sturgis, Agt., 602 Mission St., San Francisco.

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- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

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- Lithoid Products Co., Merchants Exchange Bldg., San Francisco.

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- Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.
- Giant Stationary Suction Cleaner, San Francisco and Oakland.
- Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.
- Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
- McKibben & Taylor, 2125 Shattuck Ave., Berkeley.
- Otto, W. H., 269 Park Ave., San Jose.
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- P. A. Palmer, Monadnock Bldg., San Francisco.
- Petersen, H. L., 62 Post St., San Francisco.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE MIXERS
- Austin Improved Cube Mixer. Factory branch, temporary office, 1235 Pine St., San Francisco.
- Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.
- Smith Mixers, sold by Parrott & Co., San Francisco and Los Angeles.

CONCRETE POURING APPARATUS
- Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Clinton Welded Reinforcing System, L. A. Norris, 140 Townsend St., San Francisco.
- "Kahn System," see advertisement on page 158, this issue.
- International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
- Triangle Mesh Fabric. Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.
- Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- "Concreta" sold by W. P. Fuller & Co., San Francisco.
- Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.
- Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Goheen Mfg. Co., Canton O., C. W. Coburn & Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland, Oregon.
- Moller & Schumann, 1023 Mission St., San Francisco.

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- M. Fisher, California-Pacific Bldg., San Francisco.
- Howard S. Williams, Hearst Bldg., San Francisco.
- Graham & Jensen, Maskey Bldg., San Francisco.
- Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
- Lester Stock, 12 Geary St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- John Monk, 2016 Vallejo St., San Francisco.
- Ransome Concrete Co., 1218 Broadway, Oakland.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Arthur W. Biggers, 112 Market St., San Francisco.
- Sound Construction Co., Hearst Building, San Francisco.
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

CORNER BAR
- Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BEAD
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, Pacific Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Biturine Co. of America, 24 California St., San Francisco.
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Imperial Co., 183 Stevenson St., San Francisco.
- Lithoid Product Co., Merchants Exchange Bldg., San Francisco.
- Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
- "Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
- Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS
- McCabe Hanger Mfg. Co., New York, N. Y.
- Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Crane Company, San Francisco, Oakland, and Los Angeles.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Central Electric Co., 185 Stevenson St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

MORTENSON CONSTRUCTION CO.

CONTRACTORS FOR STRUCTURAL STEEL AND IRON

H. MORTENSON, Pres. CHAS. G. MORTENSON Vice Pres. and Mgr.

OFFICE AND SHOPS: CORNER 19TH AND INDIANA STREETS

PHONES: Mission 6033—Home M 3916 SAN FRANCISCO, CAL.

"FIBRESTONE"

SANITARY FLOORING, WAINSCOT AND BASE. Laid Exclusively by
FIBRESTONE & ROOFING CO., 971 Howard St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELECTRICAL ENGINEERS
- Albert E. Noble, 173 Jessie St., San Francisco.
- Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC STEAM HEATERS
- Automatic Electric Heating Company, 2023 Market St., San Francisco.

ELECTRIC FIXTURES
- Roberts Manufacturing Company, 663 Mission St., San Francisco.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.
- San Francisco Elevator Co., 860 Folsom St., San Francisco.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco
- Van Emon Elevator Co., Natoma St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco

ENGINEERS
- F. J. Amweg, 700 Marston Bldg., San Francisco.
- W. W. Breite, Clunie Bldg., San Francisco.
- L. M. Hausmann, Sharon Bldg., San Francisco.
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.

EXPRESS CALL SYSTEM
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

FIRE EXIT DEVICES
- Von Duprin Self-Releasing Fire Exit Devices, Vonnegut Hardware Co. (See Adv. for Coast Agencies.)

FIRE ESCAPES
- Burnett Iron Works, Fresno, Cal.
- Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIRE BRICK
- Livermore Fire Brick Co., Livermore, Cal.

FIREPLACE DAMPER
- Head, Throat and Damper for open fireplaces. Colonial Fireplace Co., Chicago. (See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
- Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
- A. J. Forbes & Son, 1530 Filbert St., San Francisco.
- Fink & Schindler, 218 13th St., San Francisco.
- C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
- T. H. Meek Co., 1157 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- R. N. Nason & Co., 151 Potrero Ave., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- Moller & Schumann Co., 1022 Mission St., San Francisco.
- Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FLOORING—MAGNESITE
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

GARBAGE RECEIVER
- The Majestic Built-in Garbage Receiver, sold by Sherman-Kimball Co., Inc., San Francisco.

GARAGE EQUIPMENT
- Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GAS AND ELECTRIC FIXTURES
- Roberts Manufacturing Company, San Francisco and Oakland.

GAS GENERATORS
- Utility Gas Generator Co., 340 Sansome St., San Francisco.

GLASS
- W. P. Fuller & Company, all principal Coast cities.
- Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRANITE
- California Granite Co., Sharon Bldg., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
- Bay Development Co., 153 Berry St., San Francisco
- California Building Material Co., Pacific Bldg., San Francisco.
- Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

"White-Steel" Medicine Cabinets and Mirrors are the last word in Sanitary Bathroom Equipment. See Sweet's 1914 Catalog, Pages 1054-1055 or write for full information.

"WHITE-STEEL" SANITARY FURNITURE CO.
Grand Rapids, Michigan

Northern California
Johnson-Locke Mercantile Co.
San Francisco, Calif.

Southern California
H. R. Boynton Company
Los Angeles, Calif.

CLARENCE E. MUSTO. Pres. JOSEPH B. KEENAN. Vice-Pres. GUIDO J. MUSTO. Sec'y & Treas.

JOSEPH MUSTO SONS-KEENAN CO.

Phone Franklin —6365— **MARBLE** OFFICE AND MILLS: 535-565 North Point St., SAN FRANCISCO, CAL.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND, CRUSHED ROCK—Continued
- Grant Gravel Co., Flatiron Bldg., San Francisco.
- Niles Sand, Rock & Gravel Co., 971 Howard St., San Francisco.

GRAVITY CHUTES
- Gravity Spiral Chutes, sold by G. E. Sturgis' Supply House, 602 Mission St., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.
- American Keene Cement Co., 333 Monadnock Bldg., San Francisco.
- "Empire" Hardwall Plaster, Pacific Portland Cement Company, Pacific Bldg., San Francisco.

HARDWARE
- Russwin Hardware, Joost Bros., San Francisco.
- Pacific Hardware & Steel Company, San Francisco, Oakland, Berkeley, Los Angeles and San Diego.
- Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
- Western Brass Mfg. Co., 217 Tehama St., S. F.

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heaters, factory branch, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 710 Larkin St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRONING BOARDS
- Merritt Patent Ironing Board, sold by A. Hommel, agent, Atlanta Hotel, San Francisco.

IRON PAINT
- Gobeen Mfg. Company, Canton, Ohio.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIGHTING FIXTURES
- Roberts Manufacturing Co., 663 Mission St., San Francisco.

LIME
- Holmes Lime and Cement Co., Postal Telegraph Bldg., San Francisco.
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.
- E. K. Wood Lumber Company, East Oakland, California.

MILL WORK
- Totten Planing Mill Co., Stockton.
- Taylor & Co., 2001 Grand St., Alameda.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

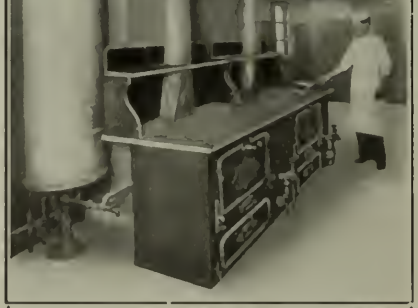
MARBLE
- Schoenfeld Marble Company, San Francisco. (See advertisement, page 154.)
- Columbia Marble Co., 268 Market St., San Francisco.
- Joseph Musto Sons-Keenan Co., 535 North Point St., San Francisco.

MEDICINE CABINETS
- White Steel Sanitary Furniture Co., rep. by Johnson-Locke Mercantile Co., San Francisco.

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Monadnock Bldg., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.



Crude Oil Burners Operating Kitchen Ranges in Government Barracks at Fort Winfield Scott

OIL BURNERS
Modern EQUIPMENTS for Cooking and Heating Plants
S. T. JOHNSON CO.
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SPENCER ELEVATOR COMPANY
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126-128 BEALE STREET
TELEPHONE KEARNY 664 SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

METAL FURNITURE
M. G. West Co., 353 Market St., San Francisco.
Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.

METAL SHINGLES
Meurer Bros., 630 Third St., San Francisco.
San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

OIL BURNERS
American Heat & Power Co., Seventh and Cedar Sts., Oakland.
S. T. Johnson Co. (see adv. below).
Fess System Co., 220 Natoma St., San Francisco.
T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.

ORNAMENTAL IRON AND BRONZE
Brode Iron Works, 31-37 Hawthorne St., San Francisco.
Burnett Iron Works, Fresno.
Palm Iron & Bridge Works, Sacramento.
California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
J. G. Braun, Chicago and New York.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.
Monarch Iron Works, 1165 Howard St., San Francisco.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
D. Zelinsky, 564 Eddy St., San Francisco.
Horace W. Tyrell, 1707 38th Ave., Oakland.
Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR BRIDGES
Biturine Company of America, 24 California St., San Francisco.

PAINT FOR CEMENT
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
Goheen Mfg. Co., represented by C. W. Coburn & Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland.
Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Tibbetts-Oldfield Co., Los Angeles.
Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
"Technola," a cement paint, sold by C. Roman, San Francisco.

PAINT FOR STEEL STRUCTURES
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
Carbonizing Coating, made by Goheen Mfg. Co., Canton, Ohio.
Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

PAINTS, OILS, ETC.
Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
Heath & Milligan Mfg. Co., 9-15 Fremont St., San Francisco.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco and Tibbetts-Oldfield Co., Los Angeles.
Goheen Mfg. Co., Canton, Ohio.
Moller & Schumann Co., 1022 Mission St., San Francisco.
Paraffine Paint Co., 38-40 First St., San Francisco.
W. P. Fuller & Co., all principal Coast cities.
R. N. Nason Co., San Francisco.
Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
R. J. Waters Co., 717 Market St., San Francisco.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
A. Knowles, 985 Folsom St., San Francisco.

PLUMBERS' MARBLE HARDWARE
Western Brass Mfg. Co., 217 Tehama St., S. F.

PLUMBING
Boscus Bros., 975 Howard St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Peterson-James Co., 710 Larkin St., San Francisco.
Wittman, Lyman & Co., 341 Minna St., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco

HERE IT IS MADE IN CALIFORNIA, TOO!
A High Class Washable Paint for Inside Walls.
OPAQUE FLAT FINISH
Less material required to cover surface than any similar product on the market.
R. N. NASON & CO., 151-161 Potrero Avenue 54-56 Pine Street SAN FRANCISCO

Phone Oakland 1205

National Roofing Company

ROOFING and FLOORING

"THE BEST IS NONE TOO GOOD"

Plaza Building, Fifteenth and Washington Streets, - OAKLAND, CAL.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES, MATERIALS, ETC.
- Crane Co., Second and Brannan Sts., San Francisco.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PULLEYS, SHAFTING, GEARS, ETC.
- Meese & Gottfried Co., San Francisco, Seattle, Portland and Los Angeles.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

REVERSIBLE WINDOWS
- Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
- Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
- Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
- Pacific Building Materials Co., 523 Market St., San Francisco .
- C. F. Weber & Co., 365 Market St., San Francisco.
- Union Blind and Ladder Company, manufacturers of the Acme rolling partitions for churches and schools, 3535 Peralta St., Oakland.
- Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
- Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
- Biturine Co. of America, 24 California St., San Francisco.
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.
- National Roofing Company, Broadway, Oakland.
- "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
- Mackenzie Roof Co., 425 15th St., Oakland
- United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
- American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle
- Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
- M. G. West Co., 353 Market St., San Francisco.

SAFETY TREADS
- American Mason Safety Tread. (See Adv. on page 147 for Coast agents.)
- Universal Safety Tread Co., represented by Pacific Building Materials Co., 523 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.

SASH CORD
- Regal Sash Cord, Louisville Selling Co. represented on Pacific Coast by Baker & Hamilton.
- Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.

SCULPTORS
- Western Sculptors, 533-535 Turk St., San Francisco.

SEWAGE EJECTORS
- Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK, SKYLIGHTS, ETC.
- Berger Mfg. Co., 1120 Mission St., San Francisco.
- U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
- Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

STEEL AND IRON—STRUCTURAL
- Burnett Iron Works, Fresno, Cal.
- Central Iron Works, 621 Florida St., San Francisco.
- Dyer Bros., 17th and Kansas Sts., San Francisco.
- Brode Iron Works, 31 Hawthorne St., San Francisco.
- Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, agents, 135 Kearny St., San Francisco.
- Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
- Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.
- U. S. Steel Products Co., Rialto Bldg., San Francisco.
- Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.

CALIFORNIA ARTISTIC METAL & WIRE CO.

J. T. McCORMICK - President

ORNAMENTAL IRON & BRONZE WORK

349-365 SEVENTH ST. SAN FRANCISCO.

TELEPHONE: MARKET 2162

STRUCTURAL STEEL

Complete Stock of:

COLUMNS	ANGLES
GIRDERS	TEES
BEAMS	PLATES
CHANNELS	CASTINGS

MODERN EQUIPPED STEEL FABRICATING PLANT AND IRON FOUNDRY

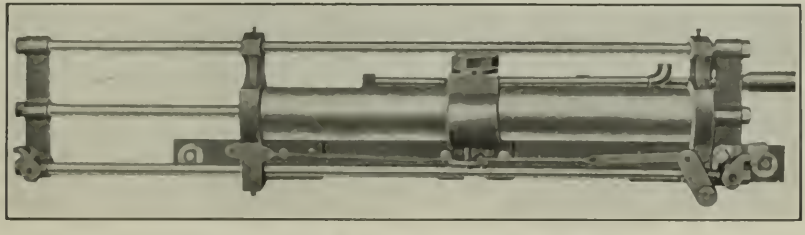
We furnish and erect Building Steel, Bridge Steel, Tank Towers, Sidewalk Doors, Fire Escapes, Ornamental and Cast Iron

J. H. Burnett Iron Works

Phone 1730

SANTA FE AVE. AND SAN BENITO STREET

Fresno, Cal.



Burdett Rowntree Pneumatic Door Operating Device

BURDETT ROWNTREE MFG. CO.

Dumbwaiters
Door Operating Devices
Elevator Interlocks

323 Underwood Building,
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Phone Douglas 2898
San Francisco, - - Cal.

Norton Elevator Door Closer

ELEVATOR SUPPLY & REPAIR CO.

Elevator Signals
Elevator Accessories
Norton Door Closers

323 Underwood Building,
525 Market Street
Phone Douglas 2898
San Francisco, - - Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL & IRON—STRUCTURAL—Continued
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
Woods & Huddart, 444 Market St., San Francisco.

STEEL PRESERVATIVES
Biturine Company of America, 24 California St., San Francisco.
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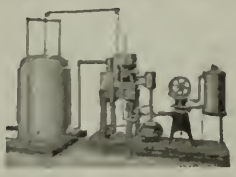

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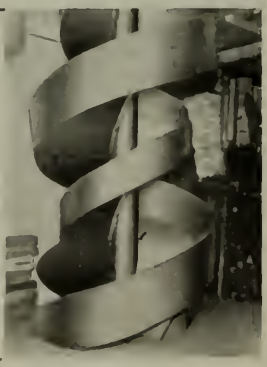

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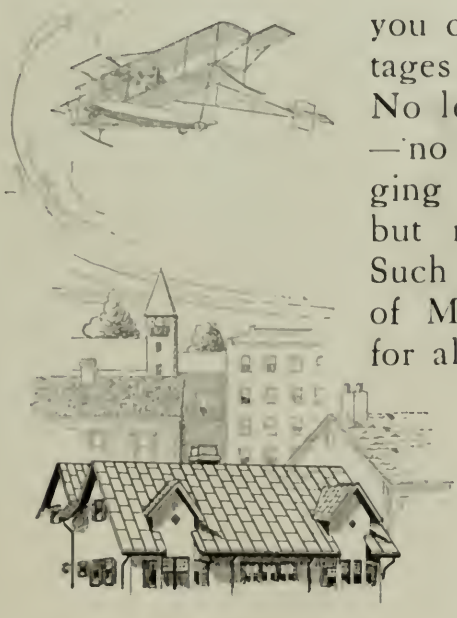

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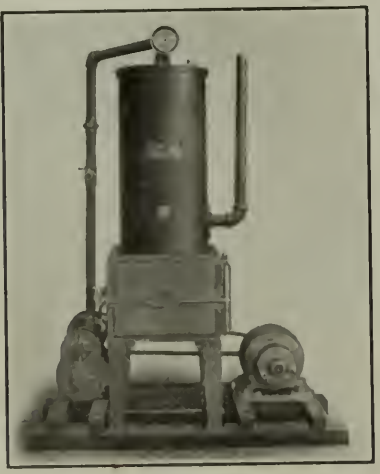

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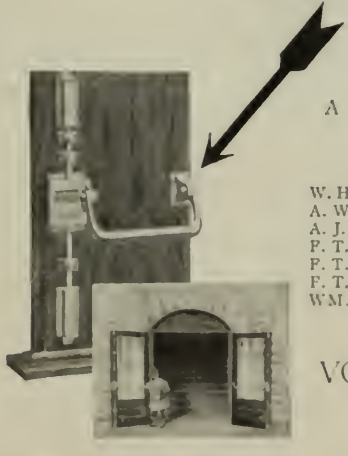

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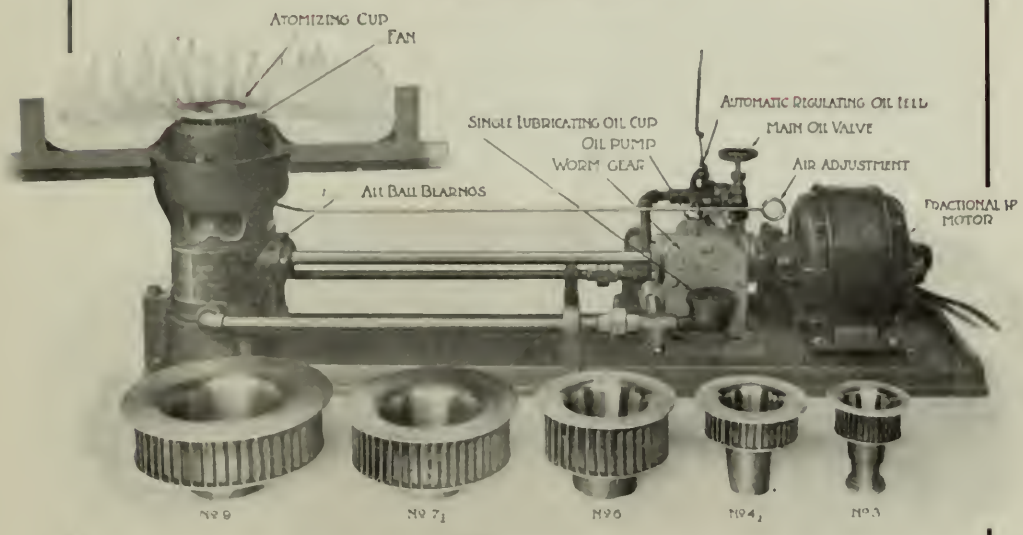

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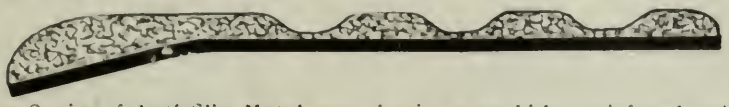

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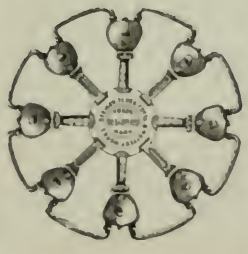

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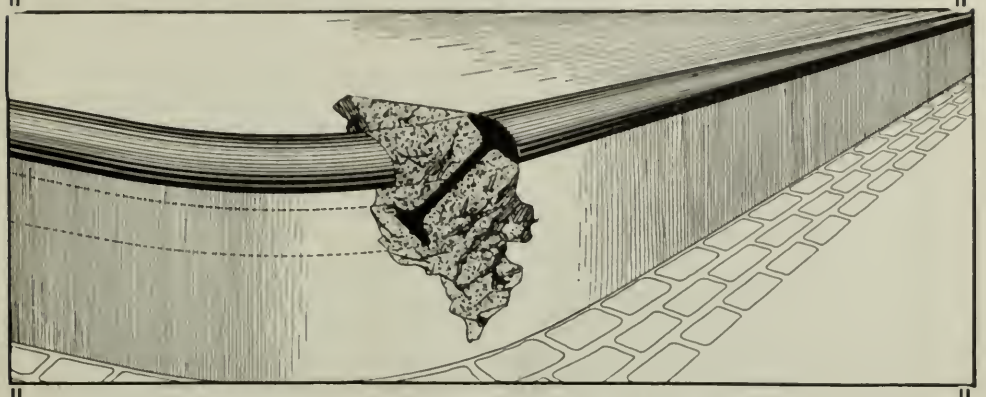

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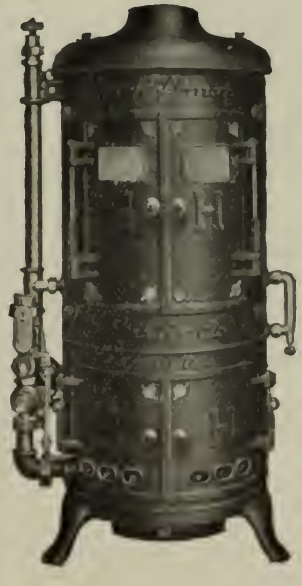

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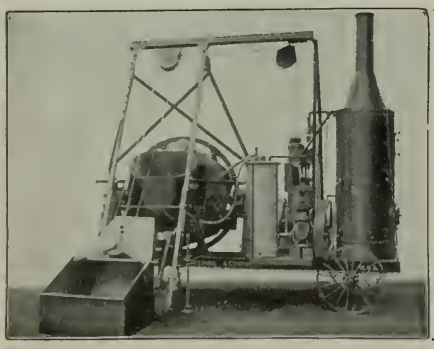

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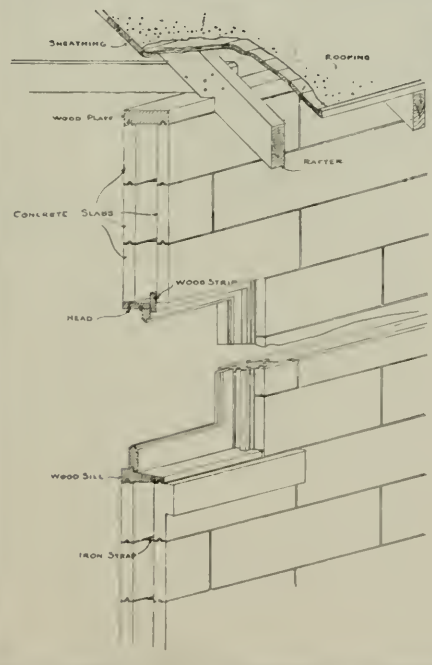

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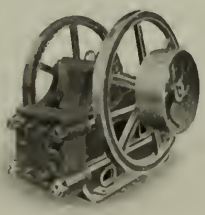

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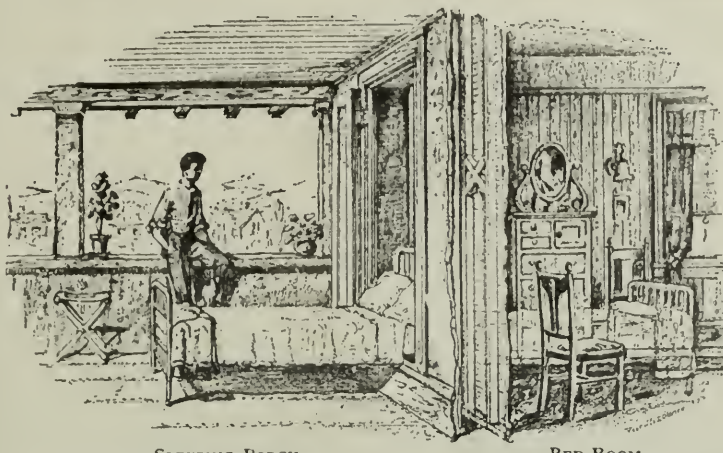

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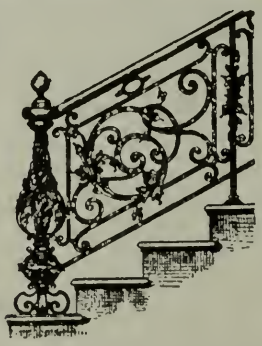

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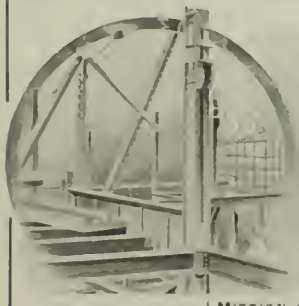

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Contents for November

	PAGE
IN A QUIET PATIO	Frontispiece
PERMANENT BUILDINGS OF RARE ARCHITECTURAL BEAUTY WILL MARK COMING EXPOSITION AT SAN DIEGO Mark S. Watson Illustrated	47
ARE THE ARCHITECTS AND ENGINEERS OF CALIFORNIA READY TO DO CITY PLANNING? Charles Henry Cheney Illustrated	59
THE IMPROVEMENT OF THE FOOT OF MARKET STREET, SAN FRANCISCO Ernest Coxhead, Architect Illustrated	65
ANNUAL MEETING OF ARCHITECTURAL LEAGUE OF THE PACIFIC COAST John Bakewell, Jr.	69
E. MATHEWSON, ARCHITECT-SPORTSMAN Frederick Jennings Illustrated	71
THE EFFECT OF THE ILLINOIS ARCHITECT'S LICENSE LAW	
UNUSUAL ARCHITECTURAL TREATMENT OF LOS ANGELES HOTEL	83
THE ENGINEER AND THE CONTRACTOR	85
CONCRETE POLES AND THE POSSIBLE MAXIMUM LOADS ON POLE LINES Walter H. Lienesch	89
TERRA COTTA IN BUILDING CONSTRUCTION H. L. Fitzsimmons	95
THE SKILL REQUIRED OF AN ARCHITECT	100
THE TIME TO BUILD A. C. Claussen, Architect	115
THE RELATIVE POSITIONS OF THE ENGINEER AND ARCHITECT	108
EDITORIAL	112
AMONG THE ARCHITECTS	114
REVIEWS OF RECENT BOOKS	122

[Index to Advertisements Page 8]

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IN A QUIET PATIO

Frontispiece
The Architect and Engineer
of California
November, 1914

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXXIX. NOVEMBER, 1914 No. 1.

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Permanent Buildings of Rare Architectural Beauty Will Mark Coming Exposition at San Diego

By MARK S. WATSON.

FRAY JUNIPERO SERRA

PROBABLY no single feature of California outside the majestic natural wonders of the state, has attracted more interest than the old Spanish missions which stretch all the way from San Diega de Alcala to San Francisco de Solano. Probably no other spirit of architecture is so completely in harmony with the California landscape. Certainly none is associated more definitely with the rare old Spanish traditions which still live in California's life of the present day, and yet there has been a singular neglect of the Spanish-Colonial type of building in the construction of new buildings along the coast. This circumstance was fully realized by the management of the San Diego Exposition five years ago when plans were being made for the buildings which should stand on top of the lofty mesa which looks down over the sea and back over the canyons to the mountains. The Exposition might have gone ahead and erected buildings of Greek or Roman type, or other conventional types which have appeared at all world's fairs of the past. Beyond a doubt the result would have been beautiful, for all buildings are beautiful when they are set in the gorgeous landscape which is possible in California as a whole, and in Southern California in particular. Beautiful the result might have been, but nothing would have been created. Consequently the Exposition adopted a different plan, and now offers to the world something which is not only wondrously beautiful, but also is creative in that it has brought about a genuine renaissance of the glories of Spanish art and architecture, and something which is productive of a very great appeal to the romantic tendencies which linger in the most prosaic.

The impression of the architects who have seen the Exposition in the city at the far Southwest, is that there has been revived an art which should have been revived decades ago, but which, now, re-created, is destined to take on new life and strength and to last for many years to come.

The visitor comes up to the edge of Balboa Park from the wharves or the railway station, passing en route buildings typical of a busy twentieth century

FROM A BALCONY LOOKING TOWARD THE SEA
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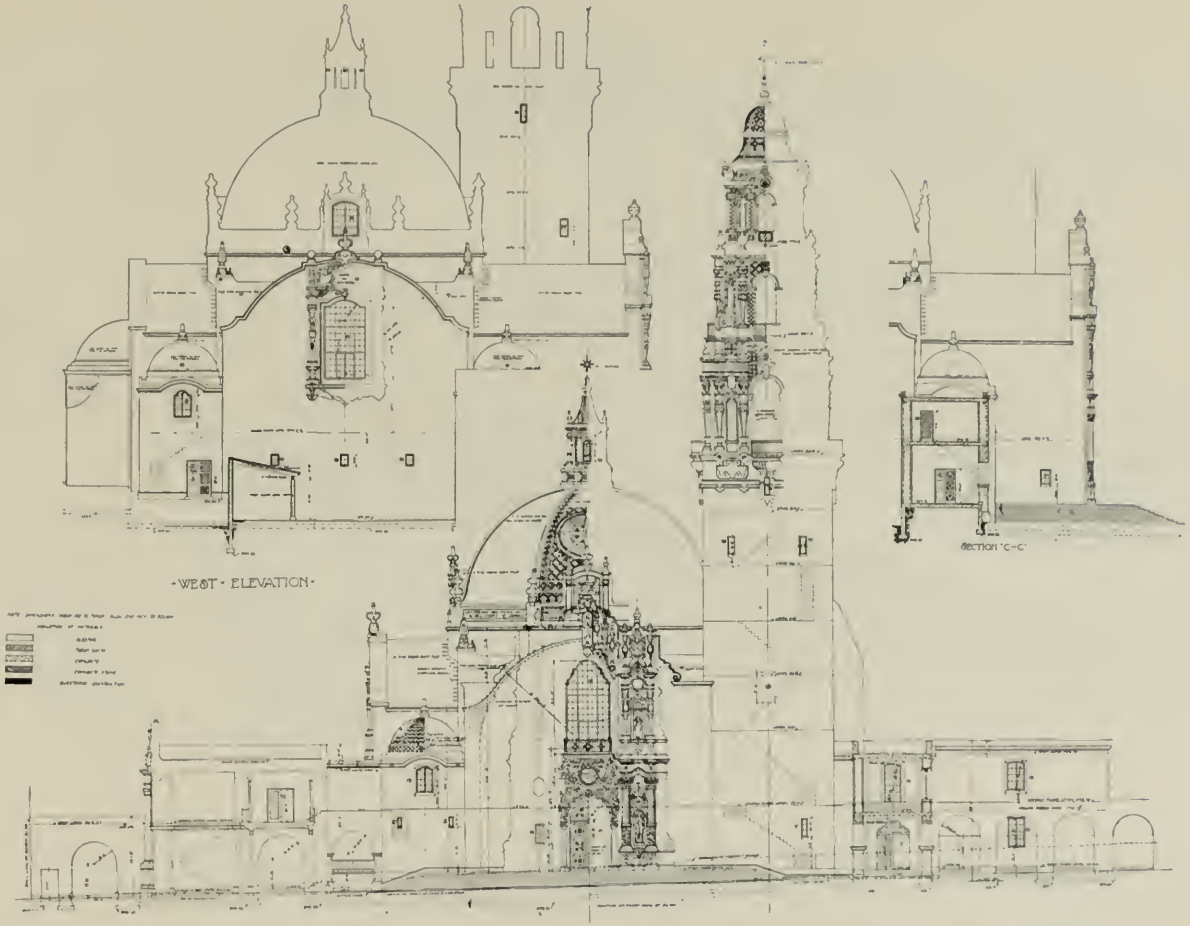

Working drawings courtesy of Architectural Review.

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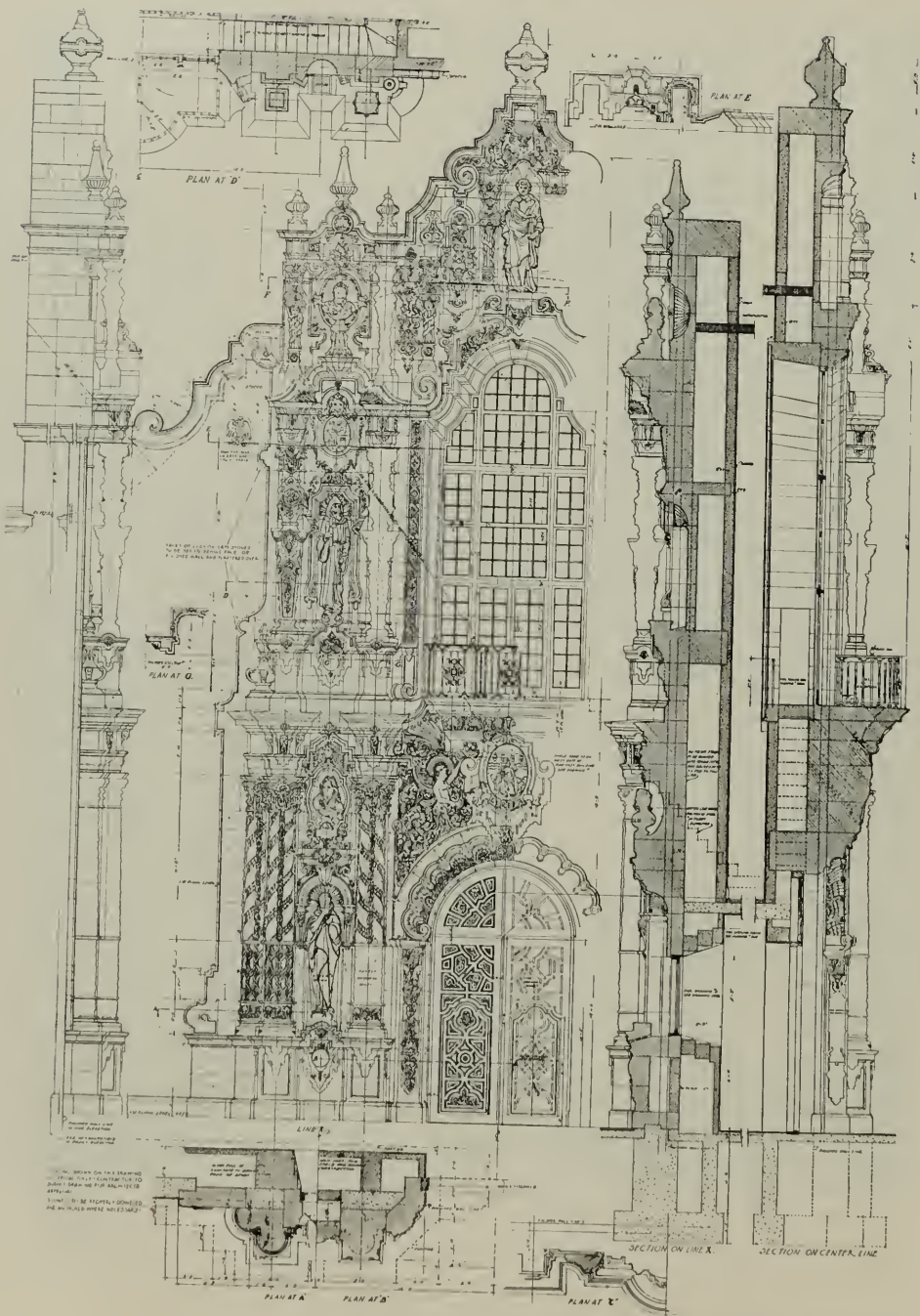

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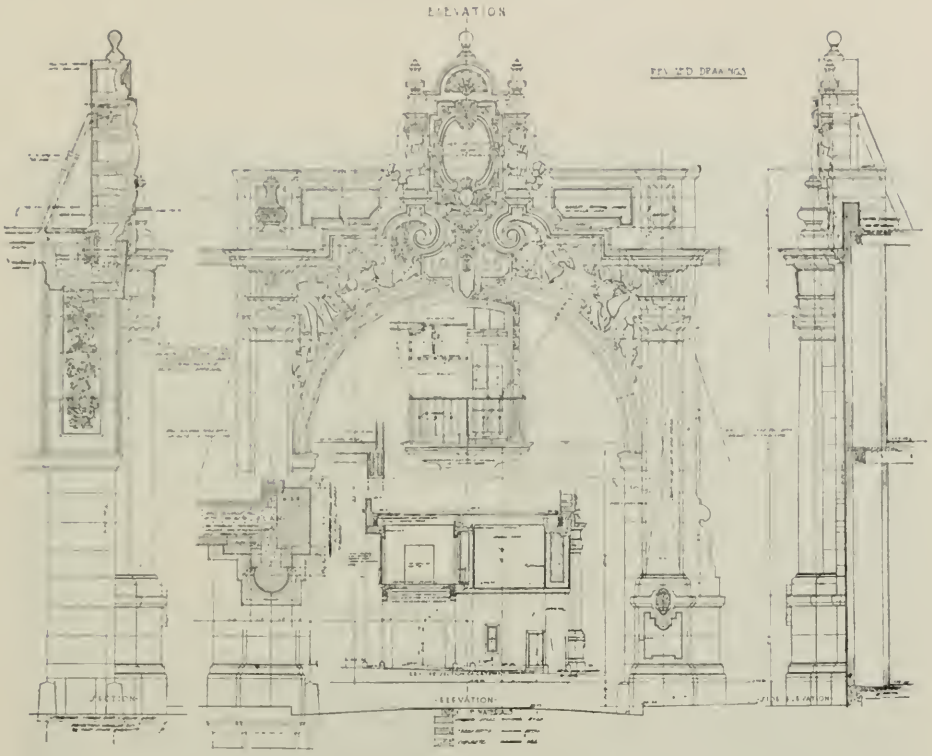

OUTER AND INNER ELEVATION OF ENTRANCE GATEWAY CONNECTING PERMANENT CALIFORNIA STATE AND FINE ARTS BUILDINGS, PANAMA-CALIFORNIA EXPOSITION, SAN DIEGO
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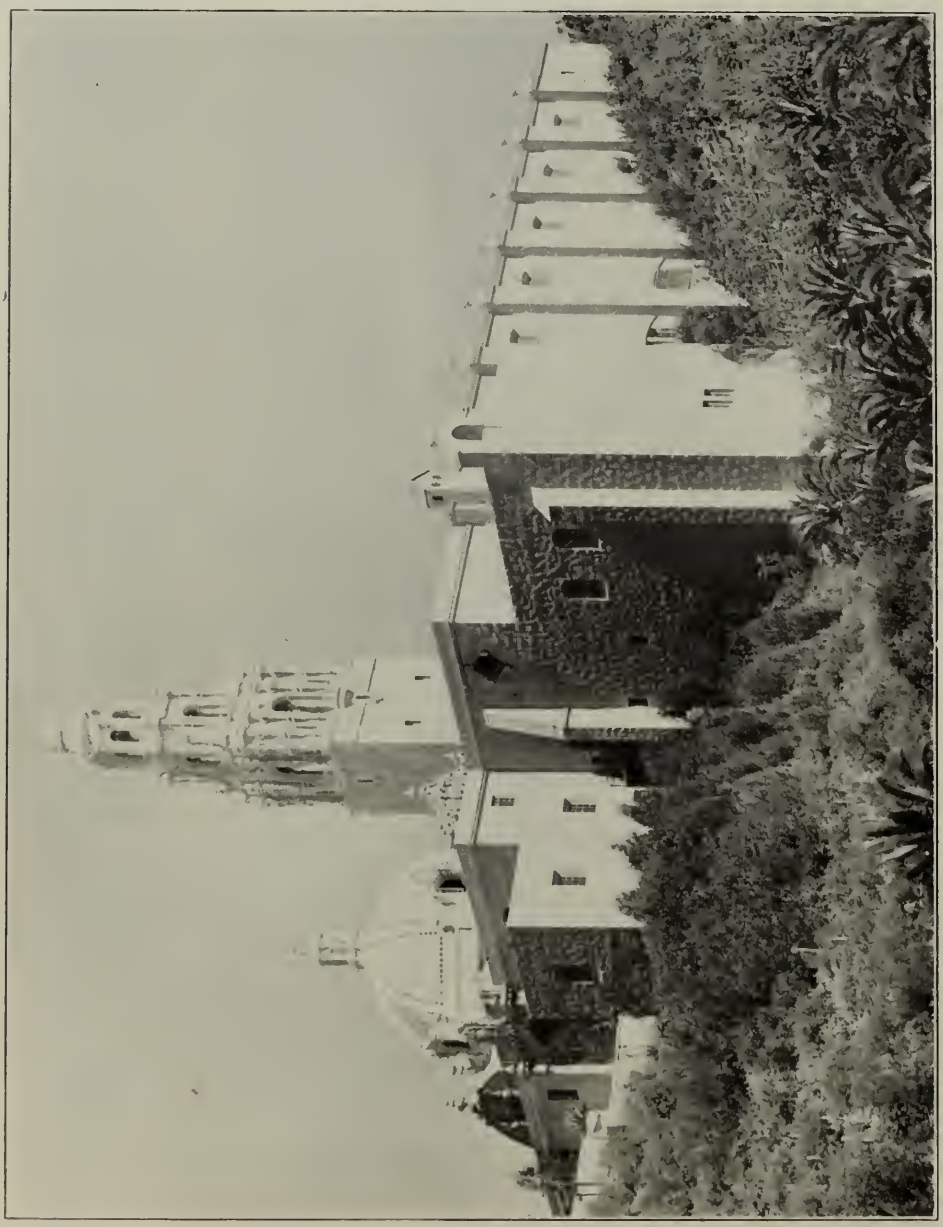
city; the rattle of street cars and the hum of modern industry fills the way. He bursts through a grove of palms and finds himself at the end of the quarter-mile Puente de Cabrillo, whose seven arches rise from the depths of a pool 135 feet below in the canyon. He crosses this impressive viaduct and comes to the great stone gateway; not spick and span as though it has been built especially for this occasion, but softened by the sandblast and chipped here and there to bring about the appearance of antiquity; it is just such a gate as might have stood at the portal of a city in old Spain of two or three or four centuries ago. He passes through the gateway and immediately the hum and bustle of the twentieth century tidewater city die away. At one side is an impressive cathedral copied in many essential details from the magnificent cathedral at Oaxaca, Mexico. At the other side is a plain old mission of the California type, and right away is noticed one of the extraordinary features of this Spanish-Colonial architecture, for the ornate cathedral faces squarely into the somber old mission and yet there is no clashing and no discord. This probably is true of any other school of architecture. Down El Prado the visitor walks between rows of black acacia set in verdant lawns; on each side beyond the lawns is a thick hedge of poinsettia, its crimson flashing brilliantly against the green of the coprosma and the other shrubs. Just beyond this hedge rise the long Spanish



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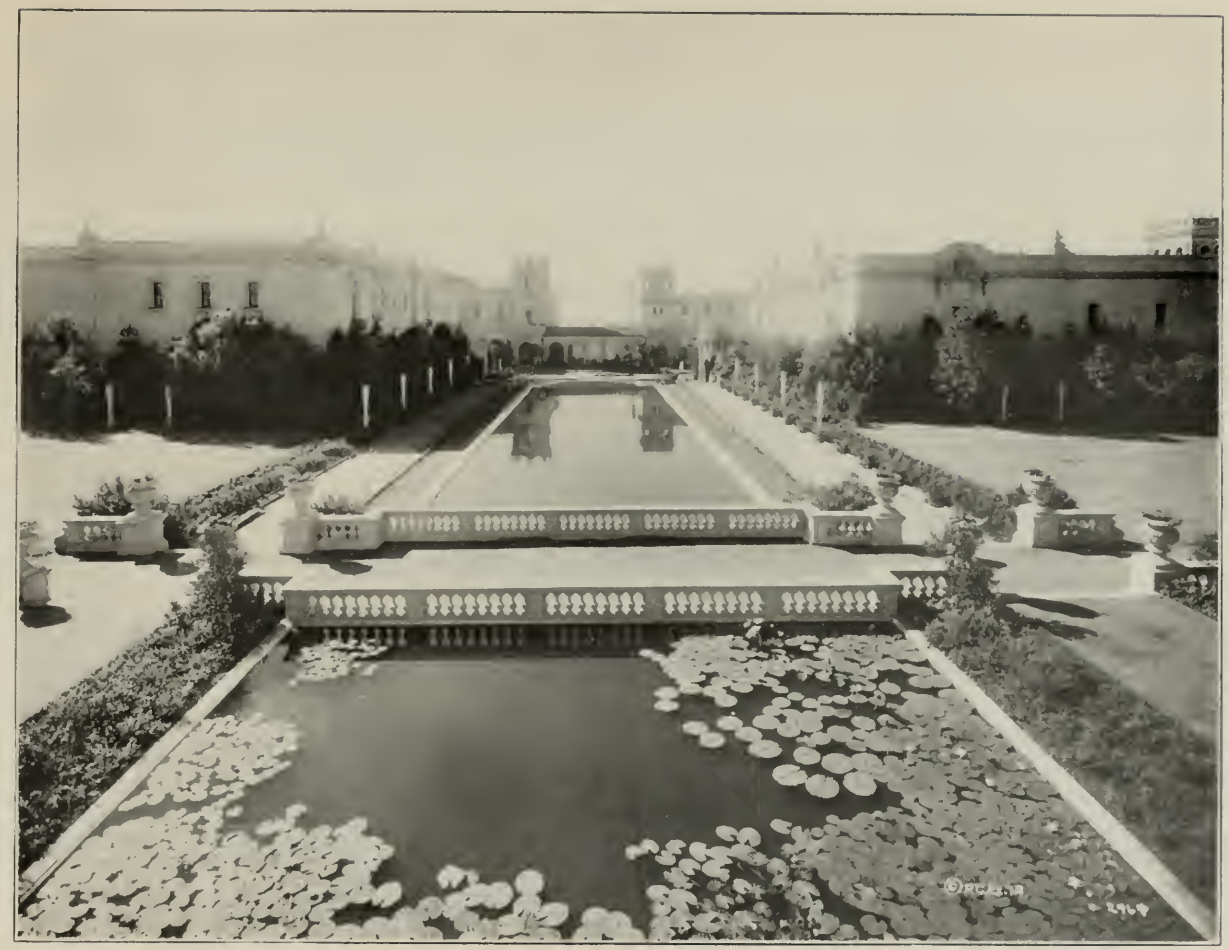

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LA LAGUNA DE LAS FLORES

BLOCK PLAN OF EXPOSITION, SAN DIEGO
Copyright 1914, Panama-California Exposition.

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PANAMA-CALIFORNIA EXPOSITION.
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arches which line the arcade stretching from La Puerta del Oesta clear along the Prado. Here is another old mission of the California type, and over across the canyon a mission of the older New Mexico type, quite as much Indian as Spanish. Down this way is a building of the pure municipal type seen today in all Spanish-American cities. Here is a rustic residence, and there an urban palace. A great building with colored cornice introduces its interesting Moorish feature. Another building at the end of the Isthmus—the name given to San Diego's amusement street like the Pike and Midway of previous years—introduces the Moorish arabesque and minaret and other features which have been adopted in some measure by Spanish-America itself. Everything is Spanish-Colonial and yet there is variety sufficient to lend fresh charm to the view. There are openings in the long arcades which lead into quiet patios whose calm is broken only by the plashing of a fountain of Pan. There are rose-covered gateways leading into pergolas which dot the broad lawns adjoining the buildings and stretching back to the brink of the canyons. There are curious exedras in the botanical gardens; there are stone balconies looking over the gulches which have been planted with a mighty variety of semi-tropical plants. These canyons furnish a most important feature of the general landscape. One reason for the extraordinary results which San Diego has brought about with a limited amount of money, is that Balboa Park as it was when the Exposition started, supplied a site which is quite incomparable in Exposition work. The great mesa occupying the center of the 1400 acre park is cut by deep ravines whose contour furnishes admirable opportunity for the development of most appealing treatments. The canyons to be sure, like the mesa, a matter of four years ago, were of hard-baked adobe in which there grew nothing except cactus and sage and chapparal. By the liberal use of dynamite, by plowing and harrowing and incessant watering these canyons have been made to bloom into a succession of great gardens which probably have no peer anywhere in the country.

The height of the bridge has been accentuated by the use of Italian and Monterey cypress. Beyond the zone where these trees are used, is a wealth of eucalyptus and acacia. Some of the trees are the varieties which bear the brilliant crimson and golden blooms. The end of one canyon has been devoted entirely to a variety of palms; also there are palms used extensively elsewhere in the canyon treatment. The brilliant canna and the soft grays of the acacia Baileyana and some of the rarer grasses have been used to add further color.

Not only was San Diego endowed at the outset with this admirable site for its exposition which could not have been bought for millions, but also it was endowed with the quite invaluable gift of climate, a climate which is the same the year around; it knows no frost nor torrid heat, and it allows the most amazing riot of hundreds of varieties of trees and shrubs and clambering vines and small blooming plants. Over all the arcades sweeps this display of vines, with the purple bougainvillea used extensively in the plaza, and the brick red bougainvillea used dominantly along El Prado; with roses used in this patio, clematis in that, and jasmine and honeysuckle elsewhere. The effect of this floral display is of great importance. Probably no other single feature at the Exposition is of more importance. It must be remembered that the majority of visitors to San Diego in 1915 will be Northerners and Easterners who have no conception of the glories of Southern California's climate and the amazing heights of beauty to which the California flora mount.

There is another point which impresses mightily the architect and engineer who likes to see full value received. There has been little at previous world's fairs more genuinely depressing than the sight on the day after the fair closed when the tearing down of the buildings began. The structures at San Diego

have been built to stay—that is, those structures which are entitled to permanency. The smaller buildings along the Isthmus being erected purely for amusement, will be torn down immediately, but all the other buildings will stand for many years to come. The great West quadrangle, for example, dominated by the California State Building, is built entirely of steel and concrete and will be used in years to come to house the museum exhibits which have been donated to the Exposition with the definite understanding that they would remain as long as the building itself stands. The wealth of rare flowers in the Botanical building is assembled for permanent use, as that building, too, is of steel and concrete. The administration building, the fire station, the hospital and the other service buildings are for permanent park use. The great music pavilion which stands at the lower end of the Plaza de Panama, is of this same steel and concrete construction, and becomes the property of the city immediately after the Exposition Company is terminated. All of the other buildings are of staff and plaster, but these perishable materials are placed on a firm backing of metal lath. Furthermore, the entire absence of frost and sudden changes of temperature and gales and drenching rains from this particular section of the San Diego valley makes certain a much greater degree of permanency than would be possible anywhere else. The life of these buildings is figured at from twenty to thirty years with proper treatment of the staff each year. The great Puente de Cabrillo, which cost approximately $250,000, is also, of course, of permanent construction and is of genuine interest from a purely engineering standpoint as the first example of reinforced concrete construction of the cantilever unit type on a scale approximating anything of this sort. It has attracted considerable interest from railway engineers, who find in it a solution to the difficult problem of bridging streams which are seasonally turbulent. It is recognized that this construction makes it possible for an extra heavy downpour of water to carry away a single pier and leave the other piers intact. This means that temporary tracks can be laid across the gap, and train service can be continued while the reconstruction of the missing unit is in progress.

With the exception of the West quadrangle, which was the work of the architectural firm of Cram, Goodhue & Ferguson of New York and Boston, the designing of the Exposition Beautiful was the work of Frank P. Allen, Jr., who figured importantly in the Seattle Exposition. The supplementary features which have been introduced by the Exposition management to carry out the Spanish ideas, are in a rare spirit of harmony. For example, not only are the buildings purely Spanish, but the guards and attendants at the Exposition throughout 1915 are attired as conquistadores and caballeros; the bandsmen are dressed in Spanish uniform; the dancing girls who appear in the Plaza de Panama and at different points along El Prado, are Spanish dancing girls in the bright costumes of old Spain, presenting the dances of the Spanish capital of two centuries ago. Some of the fiestas which will rank as special events, are the fiestas of the Spanish-American countries. Thus in the field of special events are the religious ceremonies of the Aztecs and Toltecs, and the other ancient red races. These displays then figure as more than special events because they are inseparably associated with the architecture itself. Very little is left to the imagination of the visitor save the feat of transporting himself backward three or four centuries and realizing that this magic city on the mesa is the city which was dreamed of by Cabrillo four centuries ago, and by the succession of conquistadores and padres who followed after.

It is an Exposition Beautiful in appearance and in spirit alike.

(Top) BOAT LANDING—CHATEAU DE RAMBOUILLET *THE ALEXANDER III BRIDGE AND ART PALACE, PARIS*
The Contrast between private and public landscape adornment
THE PLACE DE L'OPERA AND VICINITY *THE ARC DE TRIOMPHE AND STREET CROSSINGS*
Intersections of world-famous traffic arteries in Paris, photographed from a balloon

Are the Architects and Engineers of California Ready to do City Planning?

By CHARLES HENRY CHENEY,
Secretary California Conference on City Planning.

THE CALIFORNIA CONFERENCE ON CITY PLANNING

The California Conference on City Planning, inaugurated on a permanent basis during the League of California Municipalities Convention at Del Monte October 12th to 15th, is of the greatest interest to architects and engineers. Its purposes as outlined at the first conference are:

(1) To create the widest possible understanding of the need for city planning; to show that it is practicable and sensible from the economic and social as well as the æsthetic standpoint; and to unite all separate movements for city planning in the various cities of the State into one strong central body;

(2) To secure the drafting of comprehensive laws for the establishment of permanent city planning commissions;

(3) To assemble data, reports and general information concerning successful city planning work in other states and in Europe for the benefit of California communities; to encourage the establishment of city planning commissions and organizations and to help them as far as possible in their work;

(4) To publish the proceedings and papers of the conference recently held and of future conferences.

The officers and Executive Committee elected for the first year are: President, Percy V. Long, City Attorney, San Francisco; Second Vice-President, Duncan McDuffie, Berkeley City Planning Committee; Secretary and Treasurer, Chas. H. Cheney, Architect, San Francisco; Chas. A. Murdock, San Francisco; A. S. Lavenson, Oakland; W. H. Weilbye, Oakland; George L. Dillman, Alameda; S. E. Burum, Dinuba; Prof. I. W. Howerth, Berkeley; H. A. Mason, San Francisco; H. C. Cutting, Richmond; and members to be appointed from San Diego, Riverside, Fresno and Sacramento.

The Conference will meet annually with the League of California Municipalities, which will go to Oakland in 1915. The business of the Conference will be handled by the Executive Committee, and a General Advisory Committee of fifty, to be appointed from the principal cities and organizations of the State.

Membership is open to all those interested in city planning work in California, at three dollars per year, which includes copies of the proceedings, published papers, etc., and participation in the conferences.

HELD under the joint auspices of the League of California Municipalities and the University of California Extension Division at Del Monte, October 12th to 15th, the first California Conference on City Planning was a distinct success and inaugurated a practical movement that is bound to start something in most of the cities of the State. The attendance of nearly two hundred, principally city officials, made the dominant note the question as to what City Planning means, and how best to go about real City Planning work in the municipalities of California.

This brings the question squarely up to the architects and engineers of California, are they ready with facts, figures and knowledge of City Planning design to tackle the great problems which the haphazard and unguided development of all our cities have brought about?

In other words are they prepared to sift out from the experience of the past decade in this new municipal science, the best examples of the handling of traffic arteries as well as park systems; can they show the business men and manufacturers that proper city planning pays as well by cutting down the overhead cost of hauling as in capitalizing the attractiveness of public buildings by grouping them in a civic center?

NEW YORK CENTRAL RAILROAD BRIDGE OVER STATE STREET, HARTFORD

A DIGNIFIED AND INTERESTING RAILROAD BRIDGE IN PARIS

American and European methods of treating railway viaducts

Or can they produce convincing figures proving that over-congested housing conditions are a menace to the health, comfort and convenience of the whole community? Above all, can they show where and how housing problems have been solved and that California of all places in the world need least suffer from them if proper guidance and measures to encourage better housing be put into execution?

Unquestionably there is a large amount of city planning and housing study for which the cities of California will need professional and expert advice during the next decade. While some of the larger cities will probably seek out and employ city planning experts, much of this work will be brought to the architects and engineers of the State. Are they prepared, are they ready to do real city planning?

The civil engineers and surveyors of America had up to very recently left to them practically all of the planning of streets, cutting of blocks and lots and the general layout and re-plotting of cities. Guided almost entirely by real estate speculators, they followed the traditional checkerboard plan which William Penn so early laid out on the flats of Philadelphia. Try as they would, they seem to have found it impossible to get away from the obsession of its regularity.

No matter whether the engineers or their clients were to blame, the fact remains that sufficient analysis was never made of the growth and development of cities to furnish convincing proof that any other scheme was more economic for the whole community, more productive of social or human health, comfort and convenience, and more æsthetic in the attractiveness or harmony of building groups which it produced.

Some fifteen years ago when the architects of America began to generally appreciate the need for European study and travel, they started a movement for the City Beautiful, which went rapidly over the whole country. The obvious contrast between the orderly, restful and pleasing photographs of Paris, Vienna or any of the European cities and our dreary, ungainly, haphazard buildings and city streets, appealed to all cultured people of the United States and Canada, where well informed architects could get a hearing. City Beautiful movements sprang up like wild-fire and in some of the larger cities a great deal of money was spent for architectural "projets" showing how beautiful wide boulevards, civic centers and public buildings might be put into being at an enormous cost and the city thus become the most attractive in the United States.

While the architects of the country undoubtedly deserve great credit for educating the public, it is unfortunate that they could not prove the economic

THE CONTRAST—IN AMERICA AND A EUROPEAN GORE CORNER
These things can be done here, if we will but show that they are worth while

and social wisdom of their proposals. In almost every case the City Beautiful movements have died a natural death without leaving constructive results behind them. In the few cities where the city plans really were thought out upon more than an æsthetic basis, either their proponents did not have the common sense arguments that appeal to the business man, or they did not know how to form a permanent organization to continuously keep up the long hard fight and education of the community to put the city plan into execution.

Six years ago the National City Planning Conference was organized to bring together landscape architects, engineers, architects, social workers and city officials for mutual discussion and the better understanding of city planning problems. The Proceedings published included papers showing what a broad subject City Planning is and how the re-planning of our existing cities can only be done by tackling the problem with wide understanding and careful analysis.

It has been established that City Planning must be undertaken first, from an economic standpoint; second, from a social standpoint; third, from an æsthetic standpoint—not in the reverse order as has been usually followed. It is the science of knowing and profiting by other cities' experiments in civic development and of making the strongest local application possible.

City Planning pays because it prevents the costly business of correcting mistakes; it insures the orderly and unsightly development of the city, it handles the traffic problem to save time and money in more rapid transit of goods and people, it increases all property values by preventing the many evils of haphazard development in building, and it prevents stunted and diseased children by providing playing and bathing places through adequate playgrounds and parks. City Planning arouses and cultivates new civic thought and civic pride. It stirs all classes of people.

During the past five years a great deal of careful data has been accumulated on all the phases of City Planning. This data is contained in the proceedings of the National City Planning Conference, of the National Housing Association, and it is being published more and more prolifically by the cities of the country which are putting City Planning on a permanent basis. Lists of these reports and much literature on the subject can now be found in most libraries and is being collected for the benefit of the professions and all those interested by the California City Planning Conference and similar organizations.

Obviously the replanning of our existing cities, the establishment of small civic centers, the solution of bad housing problems or the rehabilitation of the appearance of our streets is not a matter of the present. The putting into execution of any such City Planning studies must take time and it must be somebody's business to follow up and superintend the work.

RUE DE RIVOLI, PARIS

THE PANTHEON, PARIS

Arcaded streets and public buildings at the ends of streets could be arranged, with a little forethought, in America

Permanent City Planning Commissions are now being established in practically all of the important cities of the country. Massachusetts has felt so strongly the social need of City Planning that it has made compulsory upon every city and town in the State to have such a commission. Several other states have passed similar laws encouraging the establishment of City Planning commissions. California with her young and rapidly growing cities certainly has as much or more need of such a statute than Massachusetts with three century old cities.

One of the principal sessions of the First California Conference on City Planning was held jointly with the City Attorneys' Association, and there was a lively debate over proposed necessary legislation. The Conference recommended to the next Legislature for passage, a law making mandatory, as in Massachusetts, the establishment of City Planning commissions in all cities and towns of the State; an act for the establishment of a State City Planning Commission similar to the Massachusetts Homestead Commission, to furnish and assemble data, reports and general information concerning successful City Planning work in other cities and in Europe for the benefit of California communities, to study housing conditions and the solution of the housing problem and particularly to keep in touch with and stimulate the local City Planning commissions.

A resolution was also passed commending the University of California for its Municipal Reference Bureau and requesting the establishment of comprehensive courses in City Planning and Housing.

The California Conference on City Planning was organized by delegates from the City Planning Commissions of California, city councils, commercial bodies, civic leagues and improvement clubs, real estate associations, housing, industrial, immigration and harbor commissions, and from the societies of engineers and architects. While the first year of its work will largely be taken up with organization and legislative campaigns, both municipal and state, the committees expect to give active support to all local social and community programs.

No one in this country or in Europe knows too much about City Planning or the solution of its problems. Climate and all other natural advantages of this State make it an ideal one for the development of orderly, well planned cities with greater attractiveness and greater convenience for living and doing business, than can be found anywhere in America. The architects and engineers of the State can prove an enormous power and influence for the immediate betterment of exceedingly monotonous, ridiculous and senseless con-

TREATMENT OF AN OPEN SPACE AT THE INTERSECTION OF STREETS, MUNICH

THE THAMES EMBANKMENT IN THE HEART OF LONDON

Tree-lined streets and boulevards would pay in America. There are figures how to prove it

ditions in our cities, if they will keep themselves well informed as to the latest methods of putting City Planning into execution. The California City Planning Conference has been organized to work with them and will welcome at all times suggestions and ideas for the better development of the cities of the State.

* * *

Announcement of School of Architecture

THE announcement of the Department of Architecture of the University of Michigan, Ann Arbor, Mich., has just been received, and seems to present material not usually found in literature of this description. In addition to a presentation of work by students of the Department, and a synopsis of the requirements of the department, both for admission and for graduation, there is published a general statement designed to give information to prospective students and their parents regarding the profession of architecture, the services performed by the architect, his training and the general outlook for the profession. This statement indicates, in addition to enumerating the functions of an architect, the methods and training properly employed to prepare him to discharge those functions. It also points out, to some extent parenthetically, many of his duties and obligations, which, it is feared, have too often been overlooked in the general hustle and confusion incident to a professional career.

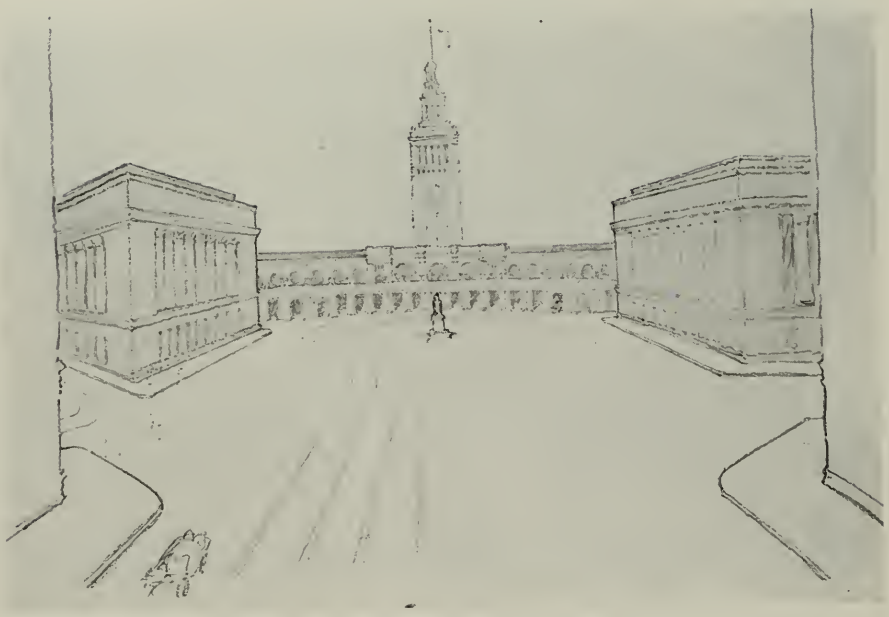
As to the outlook for the architect, it is stated that in no time of the history of the United States has there been so much interest as is now manifested in good architecture. Classes of buildings, which formerly were hardly considered from an artistic point of view—such as factories, warehouses and the like—are now being designed by architects. Many large corporations have come to a realization of the value of buildings which are at once adequate, attractive and interesting. The art development, of which architecture forms but a part, has barely begun in this country. So long as this country continues its marvelous growth, highly trained men will be needed to give form to building projects of the most varied character.

Copy of the announcement may be had upon application.

* * *

Painting the Eiffel Tower

For the fifth time since its erection the Eiffel tower is receiving a new dress of orange yellow. Sixty thousand pounds of paint is needed to adorn the great tower and fifty painters will be employed daily for three months. The new robe costs $20,000.



PLAN FOR RELIEVING TRAFFIC CONGESTION, FOOT OF MARKET ST., SAN FRANCISCO
Ernest Coxhead, Architect

PLAN SHOWING REARRANGEMENT OF BLOCKS AND WIDENING OF MARKET STREET AND THE EMBARCADERO, SAN FRANCISCO
Ernest Coxhead, Architect

The Improvement of the Foot of Market Street, San Francisco

By ERNEST COXHEAD, Architect.

AT a recent meeting of the San Francisco Society of Architects at which the discussion of the evening was the "Improvement of the Foot of Market Street," the accompanying plan was presented, as noticed in the October Architect and Engineer.

The plan is a detail of one prepared tentatively for the general improvement of the Embarcadero at the time the Exposition site was under discussion some three years ago.

During the past year interest has been reawakened upon this subject, not only on account of the increasing congested conditions of traffic at the Ferry and proximity of the opening of the Exposition, but also on account of the fact that the foot of Market Street and the Embarcadero constitute, so to speak, the front door, or vestibule of the city, and rightfully should command that same comprehensive treatment accorded the laying out of the Civic Center.

The completion of the Civic Center in conformity with a beautiful and well thought out plan, offering ample space to public buildings and wide vistas and approaches to them, will by comparison emphasize and bring into sharp contrast the ugliness of the approach to the Ferry and inconvenient traffic arrangements which now prevail at the foot of Market Street, through lack of foresight and errors of city planning in the laying out of streets in the early days.

On the north side of Market street the streets are narrow and tend to aggravate rather than ameliorate congestion. The fact that to the east of Drumm street there is no outlet northward from Market until the Embarcadero is reached, forces an additional burden upon the traffic zone of the Ferry.

On the south side of Market street, the blocks extending south are so long that to a great extent similar conditions add to the congestion.

The many plans and suggestions which recently have been put forward for the betterment of the transportation problem at the foot of Market street deal mainly with the idea of temporary relief to traffic by means of bridges, loops, subways, etc. That some such measures as these will ultimately be necessary to aid in the convenient handling of the traffic is obvious, but the final word can only be said as to the best solution of the transportation problem after a reasonable plan for the widening of Market street in front of the Ferry has been thoroughly digested and adopted together with a readjustment of the adjacent avenues of circulation.

The widening of Market street at its intersection with the Embarcadero would result immediately in lessening the traffic congestion at present existing there—the increased space thus acquired on each side of the loop being reserved for pedestrians and vehicular travel. The proposed new streets—one to the north and one to the south of Market street would divert traffic to and from the docks north and south of the Ferry building from the car lines.

The execution of such a plan of improvement as proposed, presents many features similar to those which had to be dealt with in the matter of acquiring property for the Civic Center, except that in regard to the ownership of the streets affected by the proposed changes, the State as well as the city is an interested party, having control of the Embarcadero.

The plan as proposed includes the following:

First: The widening of Market street between the Embarcadero and Steuart street from its present width of 125 feet to that of 275 feet.

Second: The continuation of Steuart street northward and parallel to Drumm to its intersection with the Embarcadero.

Third: A new street from the Embarcadero to Steuart street, parallel to and between Mission and Market streets.

Fourth: The straightening of the west line of the Embarcadero immediately north of Market street, bringing the street to a uniform width of 200 feet. It is proposed to reserve the two blocks formed by these new streets for public service buildings. While this is not an essential feature to the plan, it would be well to control the architectural character of the buildings facing the plaza in order to ensure a dignified and uniform treatment.

Fifth: The construction of an overhead viaduct or causeway in front of the Ferry building to relieve the congestion caused by the Embarcadero traffic going north and south crossing the transbay travel and car tracks concentrated at this point. An alternative plan would be to construct a subway for this purpose. The overhead structure, which would be approached by 4 per cent ramp from the north and south, would provide an additional covered waiting space for the surface car loops, thus bringing the car service into closer relationship with the ferry service.

In addition to the relief afforded by the viaduct or causeway, much of the Market street vehicular traffic to and from the docks north and south of the Ferry would be diverted before reaching the Ferry building by the opening up of the proposed two new streets.

These measures for the relief of traffic at the Ferry building would at the same time increase the efficiency of the car loops and the widening of Market street would make it possible to install additional loops if necessary, thus increasing the capacity of the Market street lines.

It is difficult to estimate the transportation problems of the future beyond a certain point. It may, however, be pointed out that the increased width of Market street at the Ferry building offers ample opportunity for subway rapid transit terminal loops and waiting stations which could be incorporated into a sub-surface terminal system that could include the basements of the two public service buildings.

In conclusion the problem for the improvement of the foot of Market street calls for a solution and treatment not alone sufficient to meet the present increasing demands, but one which will be comprehensive enough to take care of all future developments.

The City Engineer's Plan

By HENRY H. HOYT.

The plan of San Francisco's City Engineer, M. M. O'Shaughnessy, herewith illustrated, seems to be both practical and feasible in every respect. It has been indorsed by the Board of Supervisors and various improvement bodies of the city.

The scheme contemplates the acquisition of property for a new short street 91 feet 6 inches wide, and running from Spear street to the Embarcadero; this new street also being parallel to Market street. Various values have been estimated for the cost of acquiring this strip of land and the appraisals vary greatly, but the real estate valuation has been placed at $380,000.

Ferry bound traffic would be rerouted off Market street at Steuart street, hence through the new street north to the Embarcadero, connecting with the present Ferry Loop tracks as shown on the drawings.

The terminals of the Mission, Howard and Folsom street lines would be shortened about one hundred feet. The Mission street traffic would also loop and return on a single trackage via the new street and Steuart street to Mission street.

PLAN FOR RELIEF OF CONGESTION, FOOT OF MARKET STREET, SAN FRANCISCO
M. M. O'Shaughnessy, City Engineer

After taking care of the congestion of car traffic as outlined above the pedestrian traffic would be made safer and less complicated by the construction of two reinforced concrete and structural steel foot bridges from the second story of the Ferry building to the west side of the Embarcadero in the general line of and on either side of Market street, with necessary clearances, entrances, exits, stairways and accommodations for the traveling public. Proper alterations would be made to the second floor of the Ferry building so that access would be possible to the foot bridges.

The project is estimated to cost about a half million of dollars, segregated in Mr. O'Shaughnessy's estimate as follows:

Estimated cost of property to be acquired	$380,000
Cost of street and railway work (chargeable to the street railways)	56,000
Cost of North Foot Bridge	28,000
Cost of South Foot Bridge	31,000
Cost of changes to Ferry building	15,000
Total	$510,000

* * *

Cement Plastered Exteriors

Cement plastered exteriors are admittedly the most attractive and desirable finish for the modern idea of domestic architecture. "The only trouble is that it does not stay put," is repeated over and over again. The trouble is not with the plaster nor with the man that puts it on, but it is wholly a matter of the integrity of the surface that is covered with cement plaster. No wooden structure is fit for such a purpose unless the studding is cross-bridged very firmly. The studding should be no lighter than 2 x 6, full sheeted and all well anchored to sills attached to concrete or masonry foundations. Tile masonry walls are 100 per cent better than any wooden construction. In fact, they are about perfection and cost no more than wood.—Rock Products.

CHARLES PETER WEEKS, ARCHITECT
ELECTED PRESIDENT OF THE
ARCHITECTURAL LEAGUE OF THE
PACIFIC COAST

Annual Meeting at Seattle of Architectural League of the Pacific Coast

By JOHN BAKEWELL, JR.

THE Convention of the Architectural League of the Pacific Coast held in the early part of October at Seattle was very successful in many respects. The attendance was good, from forty to fifty architects being present at the different meetings, though unfortunately there were no delegates present from Los Angeles, and but three from San Francisco. There were about ten men from Portland and a number from Tacoma and Victoria. This condition was to be expected when we consider the expense and time involved in attendance, but those who were fortunate in being able to attend were amply repaid.

The first day was devoted to business, while the second day was taken up with a very enjoyable trip to Tacoma, the various committees meeting on the boat. From Tacoma the members of the League were taken in automobiles to see the Thome country residence, a beautiful example of English architecture placed in a perfect setting.

The third day was devoted to business a few hours being given to a trip around Seattle, a more extended trip being prevented by rain. It was just as well from the point of view of the real business of the convention that we were obliged to stick to business, as otherwise we would never have finished the work in the scheduled time.

The last day was taken up by a trip to Victoria and a glimpse of our British neighbors, which was of great interest to the visitors. Advantage was again taken of the long boat ride to hold committee meetings and to finish up the business of the convention.

The entrance to the tower of Victoria from the Harbor is very pleasing, the slopes down to the quays being left open and covered with grass. However, most of the architecture of Victoria is disappointingly banal and quite American. The policemen, who are typical English Bobbies in both appearance and dress, the soldiers and the people, all look strangely out of place and one regrets that the Victorians have not imported or developed more of their own distinctively British architects to give them more sympathetic architectural surroundings.

One of the most important subjects taken up by the convention was the educational work. The report on this subject showed steady progress, particularly in San Francisco; but there was a general feeling that the San Francisco Jury was losing touch with the ateliers in Los Angeles, Portland and Seattle. Various recommendations were discussed for obviating this difficulty, and it was decided to appoint a corresponding secretary to the San Francisco Jury, whose duty it will be to make reports of each judgment to these cities with photographs showing the best work done in each judgment. It was also suggested that these ateliers form their own juries to criticise the work before sending it to San Francisco for final judgment.

Another point of great interest which was discussed, was the annual exhibit. It is to be hoped that these exhibits be held under the auspices of the League, and be made circulating exhibits. The method of financing the exhibits was discussed and upon the suggestion of Mr. Whittaker of the Institute Journal it was recommended that they be financed by subscriptions under the Patron system instead of by the method which has been in vogue, of supporting them by advertising in the Year Book.

An informal discussion was held at the Tacoma dinner of the encroachment of the contractor on the architect's work. This is a serious problem in the

Northern cities and is largely responsible for the great amount of inferior work both architecturally and structurally, that is to be seen in Seattle and Portland. It was decided to hold the next annual convention in San Francisco in June of next year, and it is probable that a large number of Northern men will attend this convention.

Officers were elected for the ensuing year as follows: Chas. Peter Weeks, San Francisco, President; John Bakewell, Jr., San Francisco, Vice-President; August Headman, San Francisco, Secretary-Treasurer.

To sum up, the principal objects of the League are to promote good fellowship among members of the profession and to carry on the educational work by means of student work and exhibitions.

The first of these objects was certainly furthered by this convention. We, who attended, have made many real friends among the architects whom we met, and men who have lived in the same city for years have by means of the close intercourse of these few days changed from casual acquaintances to friends, who can meet upon the ground of mutual admiration and sympathy. Furthermore, the educational work has been kept growing in a healthy manner and the question of the circular exhibit has been brought more nearly to a satisfactory solution, though as yet it is not quite solved.

Next year's convention should advance these objects much further, and we who attended the convention felt that the League continues to justify its existence.

* * *

An English Criticism of American Methods of Design

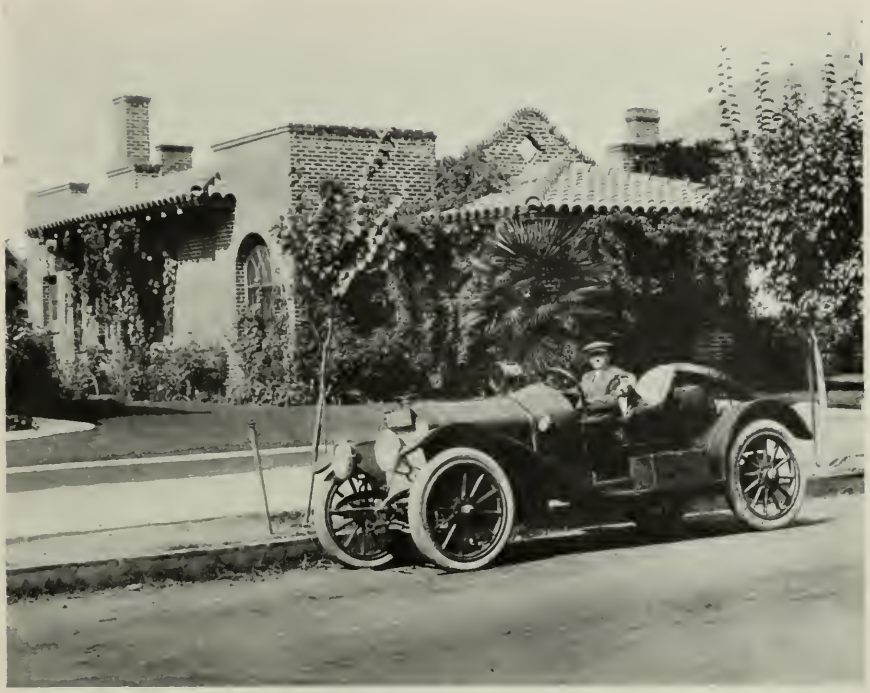
The Builder of London reproduces in a recent issue examples of domestic architecture by Robert D. Farquhar of Los Angeles, and the Hotel Oakland by Bliss & Faville of San Francisco. Some of the first and best pictures published of this hotel, were shown in the Bliss & Faville number of the Architect and Engineer last January.

Referring to Mr. Farquhar's work, it is stated:

> These very well illustrate the point of view of the American client, which is in many ways alien to us. Like the French and other inhabitants of Continental nations, the American is appealed to by symmetry and dignity, not only in public but in private buildings. There is little attempt usually to give to a house a homely character simply because it is placed in rural surroundings. During the Georgian and post-Georgian periods we approximated in our ideas of architectural planning to the Renaissance methods of design practiced elsewhere, but in the last century ordered planning has become the exception rather than the rule as applied to houses. Though the formal garden, with symmetrical methods of planning, has latterly found many advocates here, such a house as that we illustrate would appeal to few Englishmen, who are still obsessed by the recollection of what found favor in mediaeval ages, which has resulted in a type of smaller domestic buildings to which we may almost apply the designation of picturesque dog-kennels. Why we should prefer low rooms, oak beams, inglenooks, and other constituent parts of the picturesque house has never been very clear to us, while we feel there are distinct advantages in a more measured and dignified type of design. The views which we reproduce show great knowledge of the use of detail and the value of proportion.

Referring to the Oakland hotel, the tenor of the criticism is equally commendatory:

> In common with the best American work the skill of the designers is equal to their modesty, and there is no attempt to attract attention by eccentricity of detail or proportion. What has been good enough to satisfy the best architects of the Renaissance is good enough for the American architect, and a craving for new and wonderful forms is left to the effete continent of Europe.



ARCHITECT EUGENE MATHEWSON IN HIS 50-HORSEPOWER NATIONAL

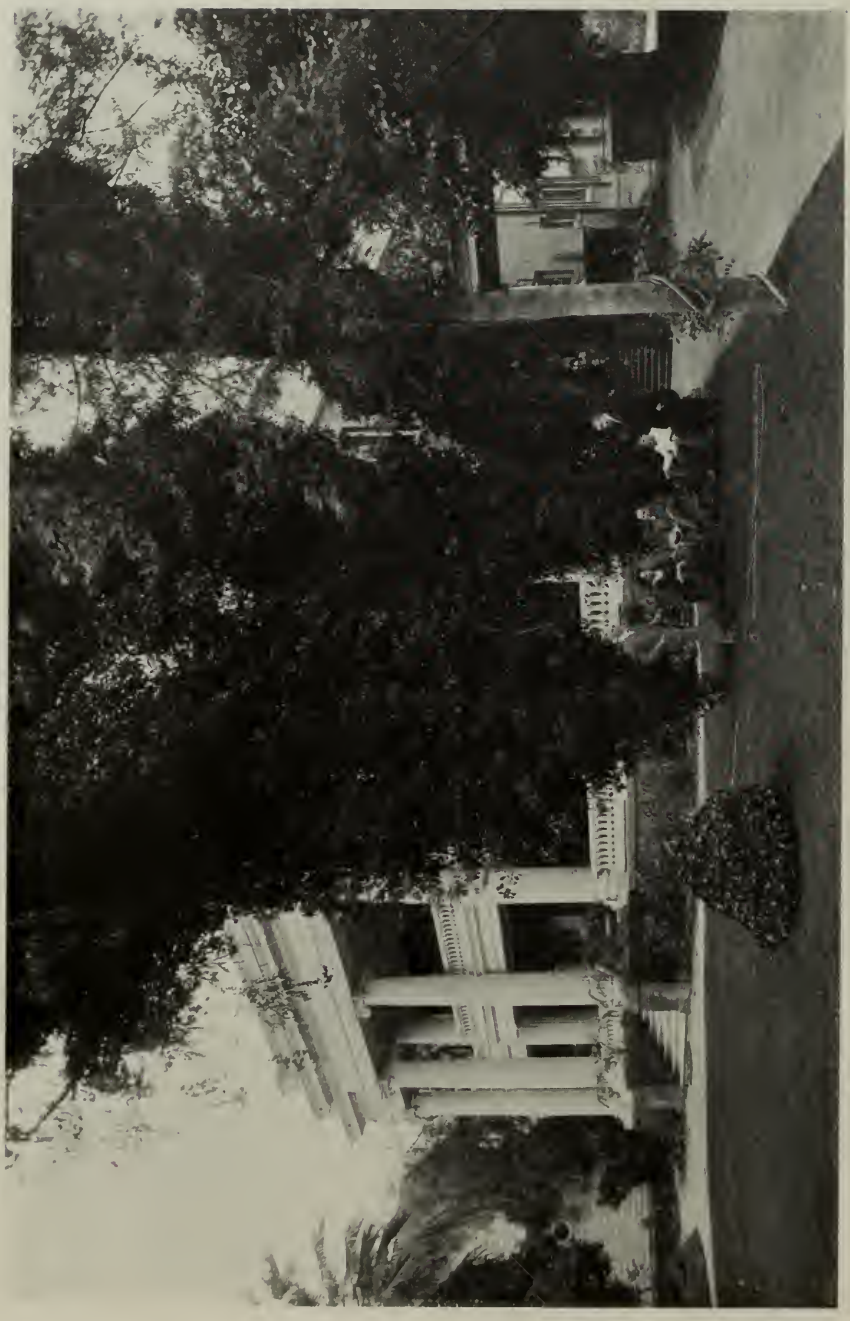
E. Mathewson, Architect-Sportsman

By FREDERICK JENNINGS

JUST to illustrate that all minds do not run in the same channel—if they did this would be a monotonous old world, indeed—there is an architect in Fresno, San Joaquin County, California, who is as proud of his 50-horse-power National automobile and prize-winning Boston bull, "Thunder," as the most distinguished San Francisco architect is proud of his best piece of architecture.

A rather queer comparison, you say, yet not so unusual when you consider that both are practicing the profession of architecture with a considerable degree of success. But in the case of the Fresno architect—his name is Eugene Mathewson—"Gene" he prefers to be called—he is an architect only in business hours, the time between he is a sportsman, and a good one, too! His heart and soul are wrapped in the enjoyment of motoring, hunting and fishing. On the other hand, we have the great architect who lives and breathes his profession. Day and night his dreams are ever of things artistic, architecturally beautiful. His work is first and last in his thoughts, and his daily routine is shaped by his professional sentiments and ideals.

"I suppose I am different from most architects," Mr. Mathewson told me one day as we bowled along the State Highway in his big car at a varying speed of from thirty to sixty-five miles an hour, "and they probably say I'm crazy about racing and hunting and all that, but I enjoy it, and my business is not neglected as anybody knows that knows me. I've designed a great many buildings in this



RESIDENCE OF HON. FRANK H. SHORT, FRESNO, CALIFORNIA
EUGENE MATHEWSON,
ARCHITECT

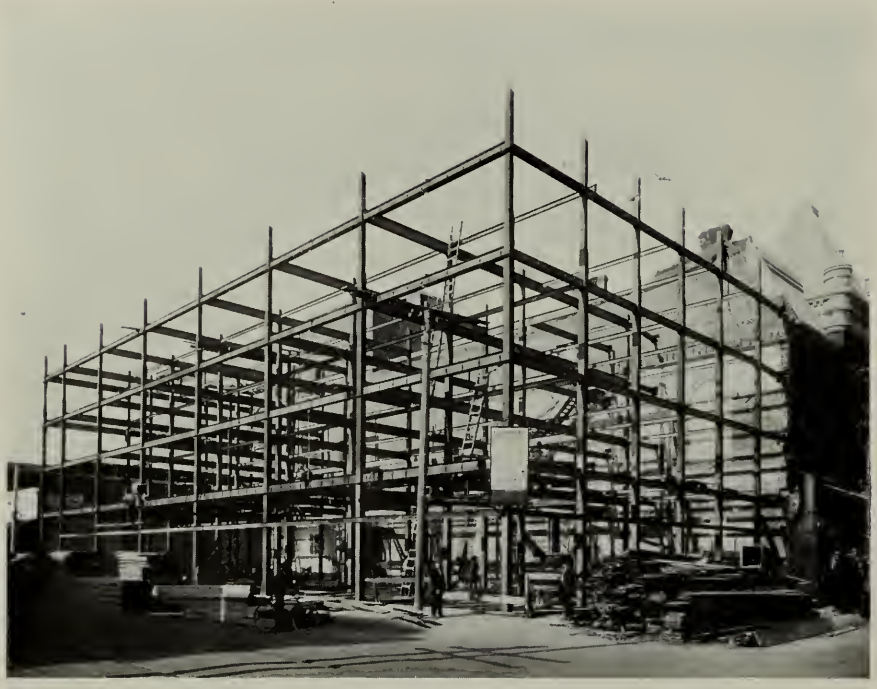
RECEPTION HALL, RESIDENCE OF HON. FRANK H. SHORT, FRESNO, CALIFORNIA
EUGENE MATHEWSON, ARCHITECT

LIBRARY, RESIDENCE OF HON. FRANK H. SHORT, FRESNO, CALIFORNIA
Eugene Mathewson, Architect

DINING ROOM, RESIDENCE OF HON. FRANK H. SHORT, FRESNO, CALIFORNIA
Eugene Mathewson, Architect

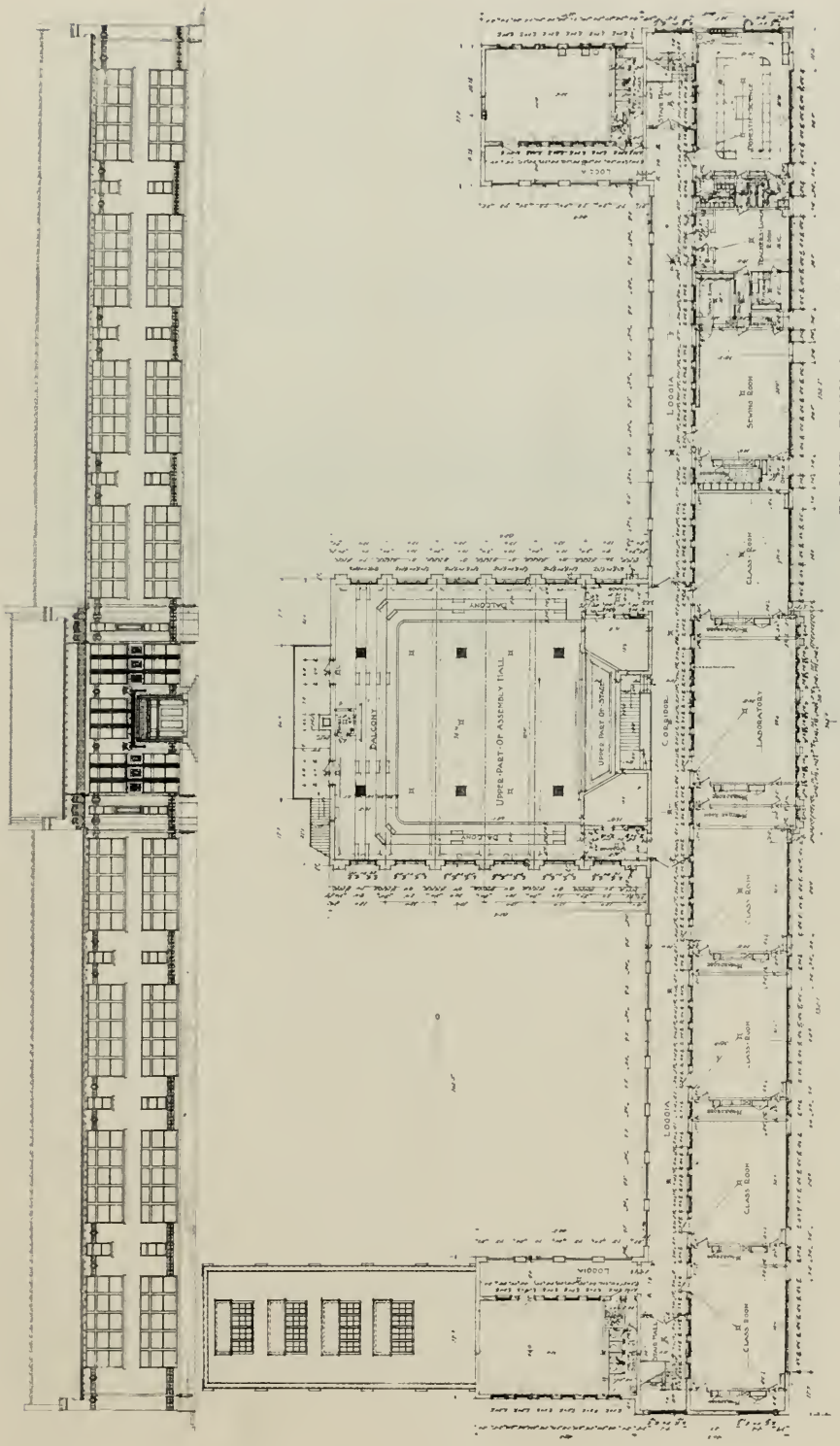
FRESNO CITY HALL, FRESNO, CALIFORNIA
Eugene Mathewson, Architect

FRESNO COUNTY ORPHANAGE, FRESNO, CALIFORNIA
Eugene Mathewson, Architect



STEEL FRAME OF L. L. CORY BUILDING, FRESNO, CALIFORNIA
Eugene Mathewson, Architect
Golden Gate Cement will be used exclusively on this building
Structural Steel by Palm Iron & Bridge Works

FRESNO COUNTY ALMSHOUSE, FRESNO, CALIFORNIA
Eugene Mathewson, Architect



FRONT ELEVATION AND FIRST FLOOR PLAN
PUBLIC SCHOOL BUILDING, FRESNO, CALIFORNIA
EUGENE MATHEWSON,
ARCHITECT

WHOLESALE WINE DEPOT FOR A. MATTEI, FRESNO, CALIFORNIA
Eugene Mathewson, Architect

valley and they are all standing and will be here when I am gone. They are not what you would call monuments, but they are in keeping with modern ideas and are designed to answer the requirements of the owners. I want to say that I have no use for the architect who employs a graduate of some famous school and gives him full leeway in handling his work. I know architects who never draw a line, depending entirely upon their draftsman, the earmarks of whose work may be found upon every plan turned out from that office. The architect, of course, gets all the crédit, but we of the profession, at least, know that the draftsman was the actual designer; and so I say I'd rather be classed as different. I design my own buildings in office hours, and when it's 5 o'clock I'm through for the day, and if there is good hunting or fishing, it's me for the big car and out into the country."

Mr. Mathewson has been practicing fifteen years. He came to California from Worcester, Mass., and has designed and personally superintended nearly all of Fresno's municipal buildings, including the city hall, almshouse, four fire houses, school houses, orphanage, county almshouse, county jail and court house at Madera, county jail in Fresno, Tulare high school, Fowler grammar school, buildings at the county fair grounds, several apartment houses, warehouses and a number of the finest homes in San Joaquin Valley.

The man in the automobile shown on these pages is Mr. Mathewson, and the dog seated beside him is "Thunder," whose father is a many times winner in the New York bench shows. Mr. Mathewson's house is shown in the background.

The Effect of the Illinois Architect's License Law

THE report of Francis M. Barton, secretary of the State Board of Examiners of Architects, presented at the Illinois State Convention of Licensed Architects, is an exceedingly interesting statement. Although the law requiring that architects practicing in Illinois must be licensed has been in effect for seventeen years, few attempts have been made to enforc rigidly its provisions until the present Board of Examiners assumed office. Before that time there had been no Supreme Court decision touching upon the legality of the act and the board, whose duty it is to enforce it, had no precedent to follow. It is interesting to note that since the legality of the act has been established the board proposes to enforce the provisions of the act on its broad interpretation.

In the report the general policy of the board is outlined, and the practical effects of the architects' license law are noted. Some of the statements are of special interest to engineers—particularly structural engineers. The full report, not essentially changed as to tone or form, is herewith given:

It gives me great pleasure to have this opportunity to inform you of the work of the present Board.

We have today 863 licensed architects; 410 architects who were admitted because they were practicing when the law went into effect, and 453 architects who passed examination by the Board. There have been given three regular class examinations since the last biennial report was made, as follows: April 15, 16 and 17, 1913; October 14, 15 and 16, 1913; April 14, 15 and 16, 1914; and preparations are now being made for the coming fall examination, which will take place October 20, 21 and 22, 1914, all at the University of Illinois, Urbana. There have also been held four special examinations under the provisions of the "Board Rule No. 10" (adopted May 10, 1907) and an exception to the same (adopted June 18, 1909). These special examinations have been held at the Board rooms, in Chicago, at the following times: April 7-8, 1913; September 25-26, 1913; March 25, 1914; and June 18, 1914 (also at Urbana). A total of 236 candidates have taken the regular class and special examinations (up to September 30, 1914), and of these 105 have passed and received certificates. Thirty practicing architects of other states received certificates after examination before the Board, by exhibits, and in some cases, after personal attendance. The following table gives a summary of the licenses issued, revoked and in force:

Date.	Total issued.	Total revoked.	Total in force.	Licenses in force. *A.	†B.
December 1, 1898	744	...	744	701	43
December 1, 1900	797	140	657	574	83
December 1, 1901	828	159	667	564	103
December 1, 1902	858	173	685	555	130
December 1, 1903	875	192	683	546	137
December 1, 1904	914	226	688	526	162
December 1, 1905	942	238	704	517	187
December 1, 1906	967	263	704	484	223
December 1, 1907	995	288	707	484	223
December 1, 1908	1,029	326	703	467	236
December 1, 1909	1,067	341	726	456	270
December 1, 1910	1,131	377	754	445	309
December 1, 1912	1,259	413	846	431	415
October 5, 1914	1,363	500	863	410	453

*Practicing before license law went into effect.
†Passed examination by the Board.

A total of 104 new licenses have been issued since the publication of our last biennial report, December 1, 1912, and 87 licenses have been revoked. It will be observed that there are only 17 more architects practicing now than two years ago.

The present Board is proud of the results it has obtained, and these results were possible solely because of the harmony that existed among its members.

This Board agrees, as a unit, in a broad interpretation of the wording of the Act, and in the strictest enforcement of the law. This Board proposes to enforce the Act on its broad interpretation and will only narrow down its interpretation by the decision of the Supreme Court.

The present Board holds that only a licensed architect can practice in this State, or from this State, and that his license is not transferable or negotiable. Any combination formed for the practice of architecture, except between licensed architects, is illegal and any licensed architect who assists others to practice, who have no license, is guilty of dishonesty, as provided in the Act, and should have his license revoked.

The Illinois State Board of Examiners of Architects has been in existence for seventeen years, but there was no Supreme Court decision until the present Board assumed office, and practically no court action of any importance that would give to this Board a precedent to follow. For the past seventeen years we have read a great many legal opinions from eminent lawyers and there has been much argument among lawyers and among architects and the public as to the meaning of the wording of the Act. This wrangle has existed for seventeen years. The Act was never broadly enforced, but complaints were mostly settled on a compromise which still left the meaning in doubt.

This Board proposes that at least eight cases of different forms of violation of the Act shall reach the Supreme Court inside of the next year, at which time the courts will definitely settle forever any question as to the proper interpretation of the wording of the Act, that is, the rights of the architect and the rights of the public; and when this has been accomplished, then the enforcement of the Act will be a more simple matter. Most of these eight cases are in preparation and some are in court at present. However, it must be borne in mind that the cases selected are cases where the violation is specific of its kind and not complicated by various other elements, so that when a decision is rendered in the Supreme Court it will be clean cut and will apply only to that particular form of violation. In other words, where a decision is made in a case where there are many points at issue the decision is of little value, except as applied to that specific case, but if the decision is based on a simple issue it will apply to all similar cases and will be of great value to the Board.

There have been attempts made by men and bodies of men, both inside and outside the profession, to dominate this Board. The members hold that their position is a judicial one and must be free from such influence. Any complaint received by this Board, either from an individual or a body of men, will receive the same consideration, and no architect will be cited before this Board without first having had an opportunity to appear informally before it.

It must be borne in mind that under the decision of the Appellate Court in the "Kaeseberg " case, this Board cannot revoke a license unless two cases of violation are proven; hence, a great many single complaints are filed that never come up formally before the Board. This leads the public and the architects of the State to feel that a great many cases presented to the Board are never pushed through to a proper finish. Each single complaint is filed, if the indications are that it contains a violation. When information of violations of the law is received from any reliable source, while the personnel of this Board remains unchanged, all architects may expect courteous treatment and a square deal, whether they be black, white or yellow, and regardless of their creed.

A word regarding the "City Ordinance" being violated by any architect may be expedient at this time. This Board is a State board, and as different cities and towns have different ordinances, the Board cannot revoke an architect's license because he violated the city ordinance, when the same architect could have built the same structure in other towns of the State without violating any ordinance. Therefore all matters pertaining to of the candidate, and that when the candidate procures his license he must, in his practice,

This Board holds that the purpose of the examination is to ascertain the qualifications of the candidate, and that when the candidate procures his license he must, in his practice, keep near to the standard set by the Board. The Board, recognizing the existence of a low standard of work turned out by some architects (drawings and specifications being incomplete, either as to construction or materials or both, and often incomprehensible and not in accordance with good engineering practice, and the buildings erected in accordance therewith not only being a financial loss to the owner but a constant menace to the public) notice was served last June, that this Board will cite before it for trial any architect who prepared drawings and specifications issued for use in this State which indicate gross incompetency or recklessness.

The Board trusts that every licensed architect will co-operate in assisting to eliminate the preparation of drawings and specifications which indicate gross incompetency or recklessness.

This Board has found its greatest work to be the elimination from the architectural field of various architectural firms, which operate under an alias, such as architectural engineers, civil engineers, industrial engineers, engineers, designers, builders, etc. Most of these violations are assisted by a licensed architect, who is either financially interested, a partner, or who secures a salary. This Board has eliminated at least 20 such illegal combinations in the last few months and expects to eliminate all others from the architectural field in the near future. These combinations are to a great extent the result of

SECOND CHURCH OF CHRIST, SCIENTIST, OAKLAND
William Arthur Newman, Architect

See P. 115 below

lack of enforcement of the law or improper interpretation of the meaning of the wording of the Act. Attention is called to the fact that all structural engineering on buildings is part of the architect's work and cannot be performed by others, except under the direction of a licensed architect; and that the architect is responsible for all engineering data shown on his sealed plans, whether performed by him or not.

The present members of the Board have thoroughly analyzed the wording of the Act and all agree it is the best Act creating any of the Boards of the State of Illinois. We do not say that the Act is perfect, but we do say that it is usual and customary not to modify a law until, through the courts, its strong and weak parts have been found. Practically no court decisions, interpreting the wording of the Act, have been had in seventeen years. The present Board feels that no attempt should be made to make any changes in the wording of the Act until such time as through the courts it is found inadequate. Any attempt made by anyone at this time to have the Act changed will be considered inadvisable.

It takes but little study of the problem to find what is needed to give the architects and public the results that the Act intended. No act is of any value or effect, unless enforced. We have the best act on the statute book, but we have not the full power to enforce it properly.

The Supreme Court has just held that the Act is constitutional, which is the only litigation of any real value this Board has had in seventeen years, and any change in the wording of the Act would render this decision worthless, as it would not apply to an act which has been changed.

The architects and public must then wait until the new or changed act is held constitutional in order to enjoy the same security they now have.

The Legislature should look with favor on any legislation that will assist the State Board in enforcing the law that has been held constitutional and the Board wishes the architects to assist it in procuring proper legislation thus giving the Board legal power to stop all buildings that are started in this State without plans drawn by licensed architects and all structures that are attempted to be supervised by others than a licensed architect, or a superintendent under the control of a licensed architect, as provided by law.

If such an amendment is procured the Board will guarantee to the public and to the licensed architects of the State the full benefit of the Act of which they have been deprived for seventeen years.

STOWELL HOTEL, LOS ANGELES
FRED'K NOONAN AND WM. RICHARDS, ARCHITECTS AND ENGINEERS

UNIQUE COUNTER OF PARKER TILE, LOBBY OF STOWELL HOTEL
Frederick Noonan and William Richards, Architect and Engineer

Unusual Architectural Treatment of Los Angeles Hotel

IN THE design of the Stowell hotel, recently opened on Spring street, near Fourth, Los Angeles, the architects have succeeded in commendable manner in solving the problem of financial success for the owner, and at the same time have successfully developed a type of architecture unusual for this part of the country.

The Stowell hotel is a twelve-story reinforced concrete building covering an inside lot of 60 x 160 ft. area and containing 264 guest rooms. The street front presents a facade which, by its originality in architectural embellishment and by its pronounced contrasts in coloring, instantly attracts attention and refreshes the eye. The first story, above the lobby entrance and store fronts is faced entirely with white terra cotta carved in leaf patterns with side panels of a harmonious but more conventional design. The second, third and fourth story fronts are broken with balconies faced in white terra cotta following a similar design, and white terra cotta ornaments set in the green enameled brick background of the two side panels.

The next five stories are practically unbroken with ornament, the height and dignity of the structure being emphasized by the wall of bright, shining green enameled brick offset by panels of white terra cotta, the latter almost plain except for their upward sweeping lines. Above the tenth story with its balcony and heavily overhanging cornice, the treatment with profusely carved terra cotta ornamentation is even more marked. The design is highly original and follows the growing tendency among Los Angeles architects to break into a new field, aided by liberal use of coloring—a tendency which may yet develop a distinctive type of architecture for which America has been looking. The interior of the hotel is equally unique in treatment.

STAIRCASE TO MEZZANINE FLOOR, REAR OF LOBBY, STOWELL HOTEL
Frederick Noonan and William Richards, Architect and Engineer
Tile Work by Parker Tile & Mantel Co.

One Reason Why Owners Do Not Build

It was a few minutes after twelve o'clock on a Saturday. A truck loaded with small steel beams backed up in front of a building in course of construction.

"Hey," said the driver to the contractor in charge, "I want to unload; send out a couple of ironworkers."

"Can't; all gone home."

"That's bad," muttered the driver, picking up the reins.

"Wait a minute," said the contractor, "and we'll get you unloaded. Send two men up here," he shouted to the foreman.

Two hodcarriers appeared, and the contractor took off his coat to lend a hand. Just then a walking delegate happened around the corner.

"Are those men ironworkers?" he asked.

"No; can't you see they're hodcarriers?"

"Then they can't handle those beams," remarked the delegate with assurance.

"But I need the beams, and there ain't any ironworkers here now."

"Can't help what you need," said the delegate jauntily; "hodcarriers ain't allowed to handle ironwork."

The driver looked at the delegate and then at the contractor.

"Guess I'd better bring 'em back Monday," he said, and without another word drove off.

The delegate lit a cigar and moved on. The contractor resumed his coat.—N. Y. Evening Post.

The Engineer and the Contractor — Their Relation on the Job

THE engineer or architect is able to plan great structures and large engineering schemes, but when it comes to the erection of these structures or the methods adopted in carrying these feats to successful conclusion, this work usually devolves upon the contractor.

The contractor occupies a peculiar position in that, to be successful, he has to be possessed of a temperament and faculties not required in the average profession. In other words the successful contractor meets and has to contend with more obstacles in his work than falls to the lot of the average business man or merchant, and in addition he has to be able to manage and direct his office affairs and the work of his employees in such a way that for every dollar spent on his work he hopes to receive more than one hundred cents in return.

The engineer has a great many advantages in planning a great enterprise over that enjoyed by the contractor; usually he is not limited in the time taken in drawing his plans and specifications, and has ample opportunity to investigate all conditions and make researches prior to the time when bids are called for, but the time allotted to the contractor for preparation of this bid is usually very short, and often a sufficient period is not allowed him for investigation of conditions, etc., source of supply of labor and material, and other important considerations which go to make up the bids prior to the opening of the same.

It has been said, and truthfully so, that a successful contractor must have three qualifications, first, Faith; second, Hope; and third, Nerve, and of these three virtues (if they may be so termed), it seems to me the latter is the most important.

First, contractors as a general rule usually know the men at the head of all large engineering schemes, upon which they bid and have faith in their judgment, and accept without question their plans and specifications as being correct, and the result of months and probably years of study, and rely in a great measure upon their judgment.

Second, they hope in event of securing a contract, to be favored with such conditions when the work is under way, as will enable them to make money legitimately, because you will find that the average contractor doing business today, is honest, and he takes a certain amount of pride in his work (although in this, as in all cases, there are exceptions to the general rule), and he hopes when certain conditions and questions arise, during the progress of the work, and the matter under discussion put up to the Chief Engineer or other official in authority, that he will be big and broad enough to look at the situation from the contractor's standpoint, as well as from the viewpoint of the municipality or corporation by whom he is employed.

Third, to undertake large contract work requires considerable nerve, because usually if conditions are favorable and the prices at which the contract has been secured are reasonable, and the specifications liberally construed by fairminded engineers the contractor sometimes makes money, but ofttimes when unforeseen conditions arise during the progress of the work, materials and labor advance, extremely rigid and arbitrary interpretations are given to the specifications, impractical and unreasonable inspectors placed on the work, and various other obstructions put in the contractor's way (sometimes by those directly interested in the contract, and at other times by disinterested parties), it requires considerable nerve on the part of any man to continue the business of contracting in order to make a living.

Practically all recent works of great magnitude have been let by contract, with one exception, that being the Panama Canal, which was constructed by the Government, under the supervision of army engineers who had practically an unlimited amount of money at their disposal, and who were not hindered in any way in the expenditure thereof; their motto being, "Build the Canal, build it well, and at any cost."

Great works like the increased water supply for New York City, the New York Barge Canal, the reclaiming of millions of acres of land in the west, the improvement of our rivers and harbors, and even down to our own local improvement, such as the water supply, the building of our sewers, paving of the streets, covering of the falls, building of the docks, extensions of parks, improvement in terminal facilities of the various railroads leading into the city, the improvement of our State highway system, erection of municipal buildings, etc., have all been let by contract, for the reason, no doubt, that those in authority recognize that where possible, it is much better to have the work done by this method than under the day labor system.

The work is done as well under the contract system as if it is performed by day's work, and ofttimes better, because on day labor work done by a State, municipality or corporation, usually there are no rigid specifications in effect and practically no inspections (except when the engineer happens to be on the work) and many things are done, which would not be tolerated for a moment if the work was being done under contract; furthermore, the engineer on contract work has less worry (this being shifted to the contractor's shoulders), and the last, but not least reason is that it is almost universally conceded that work done by contract is done far cheaper than if performed by the day labor method.

A prominent engineer once remarked that "specifications were only made for rogues and thieves, that honest men did not need any specifications"; he meant this, however, to be interpreted in a broad way.

The clauses in a set of specifications as written by the average engineer are not always clear and intelligible to the average contractor, and anyone who engages in contracting work now, if he wants to be "up-to-date" should take a course in law also, so as to be able to reason out the intent of some engineers who write specifications, because some specifications of today if literally construed as written, could place an average contractor in receivers' hands in a short time, unless he had an unlimited amount of money at his disposal.

Take the usual set of specifications as issued today for public work to reputable attorneys and ask them to give you an unbiased opinion of its contents and ninety-nine out of one hundred will tell you that you would be foolish to sign a contract with such clauses incorporated therein, because it is so written to provide all the safeguards possible for the municipality and to place the responsibility for everything that may happen, even including the acts of Providence, upon the contractor.

In other words, they bind the contractor hand, foot, body and soul, because some specifications have almost every possibility and condition between the heaven and earth, and even into the depths of the same covered by a clause which they can point out, which covers the disputed point when questions arise, but contractors must live, and some in their eagerness to secure work would sign any contract and specifications no matter how definite or unreasonable it was.

In the opinion of the writer, it is a mistake to make specifications too lengthy, but some engineers seem to think that it is absolutely necessary to have a large volume of directions written for the contractors' guidance, even though the job

is a very small one. They write so much in fact, that their requirements overlap, that is the clauses contradict themselves, and in one part of the book you will find certain clauses, and by carefully reading subsequent paragraphs, you will be left in doubt as to the real intent and meaning of the one who wrote the specifications and as to how they will be enforced.

If the specifications were short and clear, that is, expressed in plain everyday language, which neither the engineer nor the contractor could take advantage of (in other words, the avoidance of double meaning clauses), many of the disputes which now constantly arise would be prevented.

When a dispute does arise on work, the interpretation of the particular clause in question is usually put up to the engineer in charge of that particular section or piece of work for decision, and this is where a young engineer should be given some authority.

If enough confidence is placed in a man to select him as a pilot of a particular piece of work, enough trust and authority should be placed in him to construe disputed clauses liberally when the occasion arises, and he should be given the right to settle minor questions that arise, and not be troubling his chief with every little matter of detail, and only in case that he and the contractor cannot agree, should the question be carried to the Chief Engineer.

In ninety-nine cases out of one hundred minor disputes such as arise on contract work can be reasonably and promptly settled if all parties will meet with a feeling of friendliness and confidence, but the average young engineer, knowing that he has the book of specifications to rely upon, and that they are his doctrine, and the further fact that he is in authority in so far as that particular piece of work is concerned, ofttimes looks at the clauses under discussion from a very narrow point of view, and if an appeal should be taken from his decision and carried to the Chief Engineer, ofttimes he considers it a personal reaction upon his professional ability, and although the decision of the Chief Engineer may sustain him, there is always a feeling of coolness between him and the contractor.

Whereas on the other hand if the decision of the Chief Engineer should be adverse to the younger engineer and contrary to his views already reported to his chief and in favor of the contractor, usually he feels that a personal insult has been inflicted upon him and his professional ability questioned, and I have heard of instances where the engineer resolved to "get even" and, holding the master key he sometimes is in a position to take advantage of the other, because co-operation is the key to success in all great works.

Engineers and contractors gain their experience from years of hard work; text books do not contain all the rudiments of any profession; these are secured by personal efforts, hard knocks and practical experience and a young engineer at the completion of his required course in a university is not as fully qualified to pass on all questions as one who has had years of experience, although the technical education of the latter may be somewhat limited when compared with that of the former.

Contractors usually get their experience by hard work, and ofttimes at great expense, and some reliance should be put in their judgment also; in other words, some little credit should be given a contractor who has had years of experience, for knowing a little of the work he undertakes and the best method of conducting it, because, as before stated, a contractor to be successful must adapt himself to all conditions; must have such a personality as will enable him to please and work with the engineers and at the same time look out for himself from a financial point of view, if he is to be successful.

It is sufficient to say, in conclusion, that an engineer should rely somewhat on the contractor, "give him some credit for his experience, etc.," and the

same confidence should be put by the contractor in the engineer, and if they are of such temperament that they can work in harmony, disputes will not arise. When they do, they can be quickly and amicably adjusted and leave no ill feeling at their conclusion, and success will be the result of their efforts.—Engineering News.

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What Concrete Will Not Stand

PRACTICALLY every failure and near failure in concrete has been due to confidence on the part of somebody that concrete can surmount all manner of bad usage.

The fact is that there are plenty of good standards in concrete design and in concrete construction, but that they are not observed by many of those engaged in concrete building.

This neglect has a three-fold cause: ignorance, undue economy and over-confidence—and the first two could not exist were it not for the last. It is a pretty poor concrete man who does not know that frozen concrete will not set—but there are plenty who will take a chance with ten-day concrete at 40 degrees F. if they need the forms. Why? Primarily because they want to save the money that an additional set of forms would cost. But if there were not confidence that the concrete will stand up, the pocket-book would not govern judgment.

Practically every designer of concrete buildings will admit that 850 pounds per square inch is too high a stress in the concrete beams over the room where his own family sits down to dinner, but he is not so worried about that stress when it is in some one's garage. He feels confident that it will not fall down, in spite of tests which show it to have a low safety factor.

Throughout the whole field this pernicious combination of ignorance and complacency extends; instances might be multiplied almost without end. It is the duty of the societies such as the American Concrete Institute, which recently convened in Chicago, to urge upon the workers in the industry a proper appreciation of the dangers of this over-confidence. Skinning of work is a species of ignorance, for nothing is quite so evident as the fact that good work in concrete construction pays. But the man who thinks he knows more than the so-called authorities is the hardest to reach because he is clad in the nearly impenetrable armor of conceit.

Every concrete failure means a slight betterment in methods, for a certain number of hitherto unconvinced practical or commercial men are shown by that most potent object lesson, a heap of ruins, just what concrete will not stand.—Engineering News.

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Waterproofing Won't Offset a Bad Design

Some contractors seem to think that they can get out of trouble at the eleventh hour by the use of a water-proofing application, or that they can do poor construction work provided they have some water-proofing compound in their mixture. Neither water-proofing ingredients nor water-proofing applications after construction are going to help materially a bad design or careless construction.

SHOWING CONCRETE POLES OF MUNICIPAL RAILWAY, VAN NESS AVE., SAN FRANCISCO

Concrete Poles and the Possible Maximum Loads on Pole Lines

By WALTER H. LIENESCH, in Cement-Concrete Age

IT IS widely conceded among engineers who are confronted with the task of providing a suitable substitute for the present timber pole that the concrete product is the only practical solution of the problem. The two foremost points in which the concrete pole is superior to that of wood are the facts that a properly constructed concrete pole is practically everlasting, and that almost all such poles can be designed so as to make them much stronger and far more stable than the timber product. Aside from the actual strength of wires, the stability of all supports, for electric conductors is the main factor which governs the length of wire spans, and inasmuch as the stability of concrete poles can be made greatly to exceed that of wooden poles, the fact is probably established that extremely long wire spans will accompany the advent of concrete poles for general use.

Many engineers have published figures representing the possible theoretical loads on pole lines, the main factor in all such calculations being an assumed violent wind pressure acting against ice-covered wires. In addition to this the assumption is also made, that the above conditions may be accompanied with a temperature of 10 degrees below zero, and that the consequent contraction of the wires might cause them all to break in the same span. It is claimed in this connection, under the above conditions, with the wind blowing in a direction parallel to the wires, that the maximum load occurs in this direction on the pole next adjacent to the broken span.

The foregoing conditions are apparently very uncalled for assumptions; statistics have shown that such a simultaneous combination of the elements is

a very rare occurrence. No engineer attempts to figure any structure against an earthquake or a cyclone; still such calamities may occur in any locality, at any time and just as frequently as the foregoing combination of conditions. Viewing the situation from the standpoint of the purchaser who invests his money in the construction of pole lines, one must realize the vast importance of considering the interest on the increased capital which is necessary to make such work proof against conditions which so rarely occur.

Owing to the peculiar action of the catenary curve in horizontally suspended wires, a very slight movement of the wire at its point of attachment to the cross arm, will materially affect the sag at the center of span, and it is unreasonable to conceive of any suitable attachment between the wire and the insulator, which will not allow such wire to slip, in case of breakage of wire, so that the sag will touch the ground at the center of span and relieve the pole from about 50 per cent of the extreme load against which it is usually figured.

The stability of any pole is dependent upon the bearing value of the soil in which it is embedded, and it seems reasonable to believe, therefore, that the proper method in calculating the necessary strength of concrete poles is to begin at the ground line, and having determined the bearing value of the soil, it is an easy matter to design the poles accordingly and set them at such spans as are consistent with their stability.

The vertical load on any support for electric conductors is of little consequence as compared with the possible side pull in a horizontal direction at right angles to the wires. A properly designed concrete pole, therefore, should be widest at the ground line and tapering both ways therefrom; provided, however, that the bases of such poles are designed with sufficient area so as to support the combined weight of the pole and the weight of ice-covered wires. The width of the pole at the ground line should be made so as to resist the horizontal action of wind pressure blowing at the rate of 70 miles per hour, at right angles to wires covered with one-half inch of ice.

Many high tension transmission lines have been constructed with spans up to 1200 feet. Such long spans are made possible through the use of steel towers with wide bases. There seems to be no authentic reason why trolley wires for electric railways should not be hung on longer spans than are now being used in connection with standard construction of such lines. The only apparent objection to long spans for such service is the sag in trolley wires which must be reduced to a minimum on account of the limited movement of the trolley pole. Through the use of the well known catenary suspension in which the trolley wire is supported from a messenger cable, the sag in trolley wires can be eliminated entirely, and the length of spans in such lines is governed only by the economical strength of the messenger cable. Owing to the possibility of cross-circuits being caused by the side sway in telegraph and telephone wires, the use of long spans in this connection has been questioned. It seems reasonable to believe, however, that this objection can be overcome through the use of insulators staggered alternately above and below the cross-arm, and while we believe that minimum increases in wire spans can be accomplished with telegraph and telephone lines, still there is really no authentic reason against the adoption of increased spans for all concrete pole lines which are erected for the support of electric conductors.

The development of concrete poles and the improved method of setting them result in extreme stability, greatly increased spans and a consequent reduction in first cost per mile, through the elimination of many poles, cross-arms, insulators, and labor. For example: An ordinary pole line using fifty 30-ft. cedar poles per mile, set up with cross-arms and insulators attached,

ready for wires, costs in this vicinity, about $650 per mile, with a probable life of fifteen years and the possibility of renewing it entirely after every storm of any consequence. Substituting good concrete poles for this same service, using thirty 30-ft. poles per mile, set up with all attachments ready for wires, the cost per mile will not exceed $600 and the line will last indefinitely.

In view of the above conditions, it does not require any great amount of forethought on the part of the conservative pole purchaser to realize that concrete poles will eventually not only solve one and all of his present pole troubles, but that, in the long run a saving of many thousands of dollars can be effected through the elimination of constant maintenance, frequent renewals and unnecessary first cost of heavy construction.

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The Genus Architect

SOME day an architect will write his confessions. Then the layman will be able to grasp what manner of man it is who can find a point in space and say with certainty that yonder, where the birds circle and dip, shall men walk; who can dissolve a chaos of stone and steel, of timber and cement, into an habitation; who can reduce visions to paper and yet know that those visions will become reality. For it must be conceded that the architect is the lone son of the arts whose feet are firmly rooted on earth—yes, as firmly as are the foundations he lays. With the nonchalence of an acrobat it would seem that he juggles in one hand such mundane matters as stress and strain and waterproofing and grillage, while with the other he is crystallizing dreams into skylines and fashioning unbelievable cities. Were it not for these seeming contradictions, the genus architect could readily be understood.

The architectural profession, says a writer in an authoritative journal, is composed of four rather distinct types of practitioners: the experienced, ethical man; the novice of proper education and training, lacking only experience; the "architect," and the shyster. And the contributor goes on to lament—and justifiably—the public's lack of discrimination between the different types. Unfortunately, as in other professions, there are those parading as masters of the art, but whose work is only too obvious an example of the public being duped by low prices. These, if the truth were but known, are not architects at all, they are not creators, they would scarcely rank as builders, they are ghouls of other men's work. The prospective housebuilder will find it wise to look up his architect and see if he is accepted in one of the better known associations. You can generally depend upon it that the shyster will be flying alone.

But here we would speak of the tried and approved architect. What is he? What does he stand for? In some circles he would seem to be consumed with the pedantry of an academician; in others, he talks like a revolutionist. Viewed as a whole and in homely simile, the architect is a chemist, analytical and synthetical, working with very tangible substances. He analyzes the past and synthesizes it into the present. At all times he is an experimenter—or should be, for a slavish following of the academic is no less deadly than the complete disregard for it. He must draw on Greece and Rome, on France and England, for ideas; though his ultimate aim is ever to modernize the old, to adapt it to present-day needs with the aid of latter-day devices and discoveries. And such discoveries are tending not alone to the application of conveniences and inventions, but to finding the exact use for every kind of substance and applying it where it will render the best service. In his art, as in any other, only by exercising eternally the principle of selection are beauty and efficiency attained.

Were Charles Lamb or one of the other nineteenth century assayists writing on the genus architect, they undoubtedly would have considered them from two characteristic viewpoints, and faltering in such steps we would try the same: the architect in his office and the architect in his home.

That a man cannot always be judged by his clients is corroborated in another passage from the writer quoted above, "A prospective builder seeking his first experience does not, oftentimes, appear to care who makes his drawings, just so he obtains them cheaply. Having no particular respect for the building he is about to erect, he has even less respect for the architect, who appears to be a necessary evil in the affair. The architect himself, if he be of the first class, is probably not lacking in self-esteem and is far from relishing the patronizing attitude of the prospective client. He neither kotows nor clinges; and the man with money to spend is too likely to resent what he considers 'high and mightiness' in one who is only a servant after all."

Truly, it is remarkable how some folks who summon the architect for counsel fail to strike a medium of attitude toward him. Either they treat him as they would the local carpenter—demanding the impossible and, often enough, unwittingly, the inartistic; or look upon him as infallible until some misjudgment proves him human, whereupon he becomes clothed with all the weaknesses of the earth-born.

In no profession does the client seem to feel it his province to exercise such thraldom as in that of building houses; an attitude quite absurd when considered from a logical point of view. No man would dictate to his doctor, and even the lawyer cannot complain that his client arrogates unto himself the last word in counsel; yet the architect has often to tolerate and to handle with creditable diplomacy unaccountable changes of taste from his client that utterly destroy the beauty of his work.

When the architect comes to build his own house, he is as a bird released from its cage. No longer is he held in thrall by the wishes or dictates of a client. For years he has been saving up ideas of little treatments here and there with the promise that some day, when he is to be his own master, he will make use of them. He has seen a doorway in France and a chimney in England, from the South he has caught the idea for a stairs, and from Rome the suggestion for a window. Then out from their dusty corners are dragged the ideas. He spreads them before him. This is to be his own house, he says, and he will make it a model of perfection and efficiency. Then gradually creeps over him the realization that were all these ideas included in the one house it would gain fame for being little less than a curio shop.—House and Garden.

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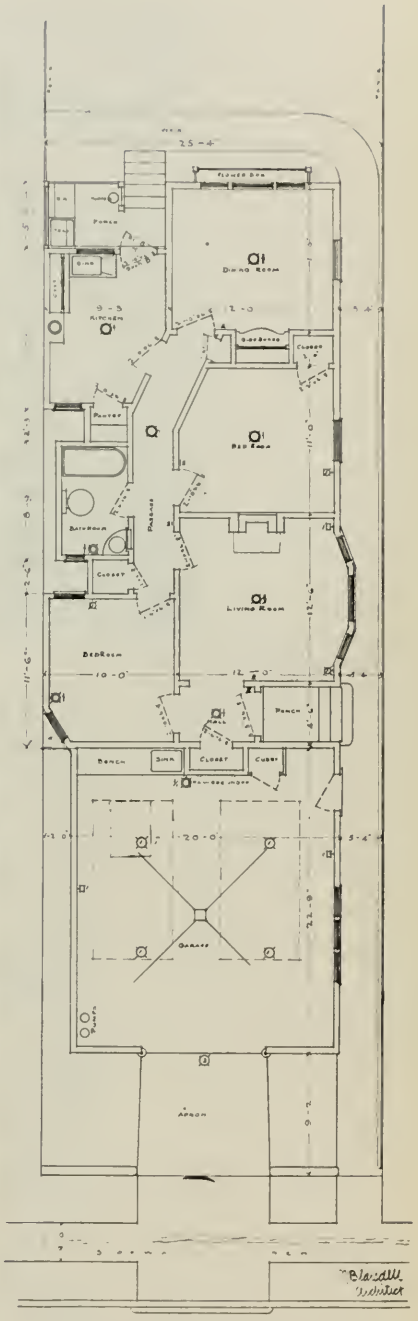
Says George B. Cortelyou:

* * * I do not think this is a time for despair, but rather for fresh efforts to push ahead into new fields as well as for the development of old ones, that we may rise to our opportunities and lay the foundations of an enduring prosperity. Least of all do I think that this is a time for the abatement of publicity efforts; indeed, these should be redoubled now, because if advertising increases demand and stimulates production *this is the time to advertise;* and the merchant or manufacturer who keeps his product prominently before the public now is not only proving his faith in the soundness and strength of American industry, and thus setting a good example to his more timid brother, but is certain to reap an ample reward in the material return that will come to him.

RAGE WITH CHAUFFEUR'S APARTMENTS IN REAR, FOR MR. FREDERICK HOHWIESNER, SAN FRANCISCO
Nathaniel Blaisdell, Architect

A CLASS C PRIVATE GARAGE WITH CHAUFFEUR'S QUARTERS ABOVE



FLOOR PLAN OF GARAGE AND CHAUFFEUR'S APARTMENTS IN REAR
Nathaniel Blaisdell, Architect

ALHAMBRA APARTMENTS, SAN FRANCISCO
A Moorish Design that is away from the Commonplace Apartment House Style
J. F. Dunn, Architect

DETAIL, LOWER STORY, ALHAMBRA APARTMENTS
J. F. Dunn, Architect

Terra Cotta in Building Construction

By H. L. FITZSIMMONS, Prince Albert, Sask.

W. E. Dennison, President of the Steiger Terra Cotta & Pottery Works, commenting on the below article, writes: "This is very good and quite accurate, which is unusual in such articles."

IN EUROPE there are numerous examples of architectural terra cotta which have been exposed to the weather for three or four centuries and which are still in good condition, while examples of stonework, subjected to the same conditions, are more or less worn and decayed. There is at the Louvre, in Paris, at the present time, some glazed terra cotta, said to have been made by the Assyrians in the sixth century, before the birth of Christ. In other museums there are some vases and other ancient terra cottas from Egypt and Greece, as well as some famous examples of work made in the Middle Ages, some of which are as perfect as if recently made. All these ancient terra cottas tell the story of durability and proclaim terra cotta to be a material worthy of the genius of those artists of antiquity who wrought so beautifully in this medium.

The Surface of Terra Cotta

The body of all good terra cotta is very much the same, but there are several ways of treating the surface, resulting in products which may be classified as follows: Standard terra cotta, vitreous surface terra cotta, mat-glazed terra cotta, full-glazed terra cotta and polychrome terra cotta. Standard terra cotta has no surface given it, which affects its porosity, a drop of water placed upon it being soon absorbed; it will absorb, also, a great amount of dirt from the atmosphere, and will become very much darker from continual exposure. On some buildings this weathering down is not objectionable; in fact it sometimes lends a charm, producing an antique appearance, which is often very desirable from an artistic point of view. Some one has said that "time is the greatest artist," and, therefore, when it is desired to produce an aged effect, standard terra cotta should be used. It is, consequently, a good material to use for rustic work in connection with country houses, college buildings, gateways, and certain styles of churches. This class of material is made in any color desired.

Vitreous surface terra cotta has a very thin spray of the surface which vitrifies in the burning process, forming a thin glaze which sheds water. This terra cotta will not absorb much dirt from the atmosphere, as the rain of each storm washes it off. It therefore practically retains its original color. This class of material is made in any color desired and is used more than any other kind at the present time, as it seems to satisfy the greatest number of requirements.

In western cities where soft coal is used, and where, consequently, most buildings are cleaned frequently, any material of a non-porous nature is very desirable, and it has been found that glazed terra cotta ranks with the most superior materials in this respect. On this account white glazed terra cotta is used to a great extent in these cities. The lustre of the glaze is deadened for artistic reasons, the glare of the sunlight on full glazed terra cotta being very severe. This is now done in the process of burning, as it has been found that sand blasting the material neutralizes the purpose of the glaze. This method has, therefore, long been abandoned by the leading manufacturers. There are many examples of buildings constructed of this material in the west and the most notable example in the east is the Plaza Hotel, New York.

For light courts, loggias to office buildings, theatres, interiors of railway stations, train sheds and power houses the full glazed terra cotta is preferable, as it helps illumination and gives a more brilliant effect.

The full glazed terra cotta and mat-glazed terra cotta are made in any color required, and when various colors are used on the same buildings, the material is termed polychrome. The various colors may be applied to the same piece if desired, or each separate color may be kept on a separate piece, if the design will permit.

Color of Terra Cotta

Within the past twenty years a great impetus has been given to the production of special colors in architectural clay products. In 1885 fully four-fifths of the terra cotta produced in the United States was red. Now there is less of red used than of almost any other color. Buffs and greys of several shades, white and cream-white are now the prevailing colors. By the use of ceramic colors almost any required tone may be produced, and the effect obtained by using glazed terra cotta of various colors in combination, such as blue, yellow, white, purple, brown, old gold, green or red is often very beautiful. If any particular shade of color not included in the manufacturer's standard samples is desired, the architect should consult with the manufacturer, who will then experiment until the required color is not only produced, but guaranteed to be permanent and free from all tendency to crack. It is generally agreed that there is a great field for this polychrome terra cotta, especially for theatres, restaurants, and buildings of a similar nature, for interiors, loggias, fountains and department stores.

Although the art of using colored terra cotta is very ancient, having been in practice before the Christian era, it is, to some extent, an undeveloped field in this country and offers alluring possibilities in architectural design and construction. It can be used in a very modest and sparing way as well as very profusely; and either in soft tints or in brilliant colors, as the taste of the architect may dictate. Where a rich decorative treatment is required, as in the interiors of public buildings, like our great stations, hotels and theatres, polychrome terra cotta can be employed most effectively and economically. In variety and beauty of tones, terra cotta has now reached a very high standard of excellence, and may be used by the architect to express the highest type of his art. The almost unlimited possibilities presented by the judicious application of colored glazes for exteriors as well as for interiors, has awakened an unusual interest in the use of polychrome terra cotta, a building material with superior qualities of resistance against the deteriorating effects of time and of the action of fire and frost.

Terra cotta is not imitation stone and should not be used as such. It is a material having peculiar qualities which give a distinctive character, and therefore, to be successfully used, it should not be employed in such a way that it will appear as an imitation of, or as cheap substitute for some more expensive material. This may be brought about in several ways. There may be used certain forms and certain styles of ornament more characteristic of terra cotta than of any other material.

One architect has evolved a certain style that he has applied to many buildings, and which is not suitable to any material other than terra cotta. This may be said of both the form and ornamentation of his buildings. The architects of the Flatiron building and of the Wanamaker building, in New York, have successfully used this material for its own sake and not as an imitation. Another firm of architects have used profusely modelled terra cotta to produce highly ornamental effects not so easily obtainable in other materials, and their recent use of colored terra cotta is typical of this material alone. In the West Street building, New York, the architect has made a design distinctly expressive of the material used. This is noticeable in the ornamentation, in the form of cornices and molding, in the coloring and even in the plain shaft of the building. In the

Brooklyn Academy of Music the architects have accomplished this result by the use of color.

In regard to the use of terra cotta, it has been said that it is by the use of polychrome terra cotta that the material has its best opportunity for expressing its individual character. It was so in antiquity, in the Middle Ages, and is so at the present time, because polychrome terra cotta is a material complete in itself, and used for its own sake. It cannot by any means be considered an imitation of, nor a substitute for, something better.

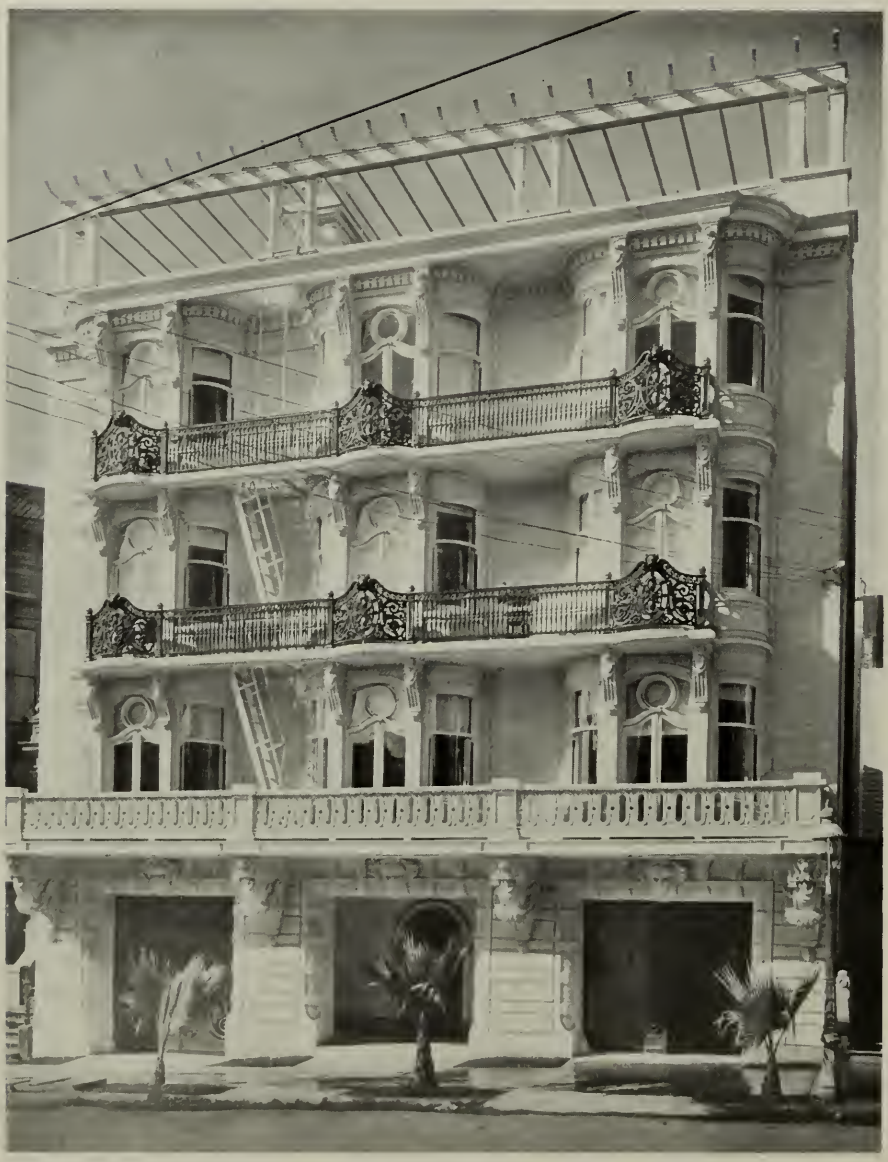
Durability of Terra Cotta

The principal value of terra cotta lies in its durability. When made of the right materials and properly burned it is impervious to water, or nearly so. When glazed it is absolutely impervious, and hence not subject to the disintegrating action of frost, which is a powerful agent in the destruction of stone. It does not "vegetate," as is the case with many stones. The ordinary acid gases contained in the atmosphere of cities have no effect upon it, and the dust which gathers on the moldings is washed away by every rainfall. Underburned terra cotta does not possess these qualities to so high a degree, as it is more or less absorbent. Another great advantage possessed by terra cotta is its resistance to heat, which makes it a most desirable material for the trimmings and ornamental work in the walls of fireproof buildings. Although terra cotta has been used in this country for but a comparatively short time, it has thus far proved very satisfactory, and the characteristics above indicated would point to its ranking in common with the better qualities of bricks, with the most desirable of building materials.

Inspection and Methods of Setting

A sharp metallic, bell-like ring and a clean, close fracture are good proofs of compactness and strength. Perfection of form is in the highest degree essential, and can result only from a homogeneous material and a thorough and experienced knowledge of firing. No spalled, chipped or warped pieces of terra cotta should be accepted, and the pieces should be so hard that they will resist the scratching with the point of a knife. The blocks should be of uniform color also, and all mouldings should come together perfectly at the joints. Terra cotta with a vitreous surface and mat glazed terra cotta should be so non-absorbent that water will lie in drops on its surface without being quickly absorbed. Full glazed terra cotta should be so non-absorbent that ink will not penetrate the surface, and may be entirely washed away with water.

Terra cotta should always be set in either natural cement or Portland cement, mixed with sand, and in about the same way as stone is set. As soon as set, the outside of the joints should be raked out to a depth of three-quarters of an inch to allow for pointing and to prevent chipping. The terra cotta should be built up in advance of the backing, one course at a time, and all voids, except those projecting beyond the face of the wall, should be filled with grout or mortar, into which bricks should be forced to make the work as solid as possible. All blocks not solidly built into the walls should be anchored with galvanized iron clamps, the same as for stonework, and, as a rule, all projecting members over 6 inches in height should be anchored in this way. After the walls are up the joints should be pointed with Portland cement colored with a mineral pigment to correspond with the color of the terra cotta. The pointing is done in the same way as in stone work, except that the horizontal joints in all sills and washes of belt courses and cornices, unless covered with a roll, should be raked out about two inches deep, calked with oakum for about one inch and then filled with an elastic cement.



MONTELLANA APARTMENTS, SAN FRANCISCO
J. F. DUNN, ARCHITECT

Disadvantages and Cost of Terra Cotta

One of the principal objections to the use of terra cotta is the time required to obtain it, especially when the building is some distance from the factory. About six weeks are required for the production of terra cotta of the ordinary kind, and the architect should see that all the drawings from the terra cotta work are completed and delivered to the maker at as early a stage in the work as possible, so that he may have ample time to produce it. This will obviate any delay if the architect's drawing and instructions are clear, distinct and complete, as it takes longer to obtain the steel construction work than it does to make the terra cotta. Most of the delay in obtaining terra cotta is really due to the fact that prompt and careful attention is not always given to the preparation of the terra cotta drawings and instructions. Small pieces of terra cotta may sometimes be obtained within two weeks from the receipt of the order, when the molds are already on hand. It is always more expensive, however, to attempt to turn out work in such short order, and inexpedient on account of the risks in forcing the drying.

Terra cotta is generally less expensive than stone, and ornamental work costs in stone about three times as much as it does in terra cotta. Being lighter in weight, the freight charges are less. In large buildings the use of terra cotta reduces the cost of the steel construction, because when it is used on the exterior the steel may be about one-third smaller and lighter, thereby reducing the cost proportionately. This saving is an important item in large structures. The cost of erecting terra cotta is less than that of erecting stone, two stories of an all terra cotta exterior being sometimes put in place in the same time that it takes to set one story of stone. The advantage in point of cost in favor of terra cotta is greatly increased if there is a large proportion of molded work, and especially if the moldings are enriched. The use of terra cotta for trimmings, and especially for heavy cornices, in place of stone, often reduces the cost of the walls and foundations, as the weight of the terra cotta will be much less than that of stone, and the walls and foundations may be made lighter in consequence.

Weight and Strength and Tests

The weight of terra cotta in solid blocks averages 122 pounds per cubic foot. When made in hollow blocks 1½ inches thick, the weight varies from 65 to 85 pounds per cubic foot, the smaller pieces weighing the most. For pieces 12 by 18 inches or larger on the face, 70 pounds per cubic foot should be a fair average. The crushing strength of terra cotta blocks in 2-inch cubes varies from 5,000 to 7,000 pounds per square inch. Hollow blocks of terra cotta, one foot high, unfilled, have sustained 186 tons per square foot. From these and other tests I would place the safe working strength of terra cotta blocks in the wall at 5 tons per square foot when unfilled, and at 10 tons per square foot when filled solid with brickwork or concrete. If it is desired to test the strength of special pieces, two or three small pieces should be broken from the blocks and ground to 1-inch cubes, and then tested in a machine. Should the average results fall much below 6,000 pounds the material should be rejected.

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Unusual Treatment of Two Apartment Houses

THE plates on pages 94 and 98 show two striking examples of a new style of apartment house architecture that is increasing in favor. They satisfactorily demonstrate what may be accomplished by a judicious combination of cement work and clay products. In the Alhambra apartments we have a Moorish design—a background of plain white cement set off with the rich coloring of polychrome terra cotta. The roof is of red clay tile. The other building is French Renaissance with an elaborately designed stucco and terra cotta front and ornamental iron balconies on the second and third floors. Both buildings were designed by Architect J. F. Dunn of San Francisco.

The Skill Required of an Architect

THE skill required of an architect in the preparation of plans and specifications, and his liability for negligence in drawing them, constituted the subject of a recent decision of the Iowa Supreme Court which is reported in full on page 277, 145 Northwestern Reporter. Plaintiffs, a firm of architects, sued to recover the amount of compensation which defendant agreed to pay them for preparing plans and specifications for a business block embracing storerooms and a theater. Defendant counterclaimed for damages declared to have been sustained by him on the ground that the plans and specifications were defective in that, as claimed, the plans for the theater were so defective that occupants of boxes could not view the stage, that trusses over the stage were so placed that valuable curtains were cut off, that an arch was so unskilfully planned as to bulge the sustaining walls, that no proper means of ingress and egress for certain rooms were provided, that ventilation for the storerooms was not provided for adequately, and that details were so defectively prepared that pillars under the balcony of the theater had to be cut off and the balcony lowered.

On trial of the case, plaintiffs recovered the full amount claimed by them, under an order given the jury by the Judge to find for plaintiffs. But, on defendant's appeal to the Supreme Court, the judgment was reversed and the case sent back for a new trial on the ground that defendant had made out a strong enough case to go to the jury on his counterclaim.

The Supreme Court said, in part: "As practicing architects, plaintiffs were bound to furnish plans and specifications prepared with a reasonable degree of technical skill, and such as would produce, if followed and adhered to, a building of the kind called for, without marked defects in character, strength or appearance." The court finds that the evidence offered on the trial by defendant to sustain his counterclaim was not wholly satisfactory, but that it was sufficiently strong to go to the jury.

The measure of an owner's damages which he can recover against an architect on establishing that the latter has been negligent in the preparation of plans and specifications, is thus referred to by the Supreme Court: "It may well be doubted whether the record calls for a statement by us of the true measure of damages in such case, but it would seem to be the rule of reason, as we think it is the rule of law, that where the defect complained of is of such character that it may be corrected without unreasonable or disproportionate expense, such expense will properly measure the damage so sustained; but if the defect be so intimately connected with the body of the structure, or so inheres in some permanent part of such structure that it cannot be remedied at reasonable expense or without tearing it down or rebuilding it, or some material part of it, then the rule suggested by the trial court would be applicable." That rule is that the damages are to be measured by the difference between the value of the building as it is in its defective condition and its value as it would have been if built upon correct plans and specifications.

The Kentucky Court of Appeals, having been called upon to determine the degree of care required of architects in preparing plans for buildings and in superintending construction, recently decided in the case of Kortz vs. Kimberlin, 15 Southwestern Reporter 654, that there is no duty to prepare perfect plans, exercise of a reasonable degree of skill in their preparation being sufficient; and that an architect is not liable for a defect in construction, if he has used ordinary care to see that the work is done properly.

In this case Mr. Kimberlin brought suit for compensation for drawing plans for a dwelling house and for superintending its construction, and judgment having been awarded in his favor, defendant owners appealed from a disallowance of their counterclaim for damages declared to have been sustained by

UTAH STATE CAPITOL BUILDING, SALT LAKE CITY, UTAH
R. Kletting, Architect

them through defective performance of the service. In affirming the judgment, the Court of Appeals said:

"While it is true that a public profession of an art is a representation or undertaking to all the world that the professor possesses the requisite ability and skill, and it therefore follows that an architect is presumed to possess the skill and ability necessary to the practice of his profession, and is liable for defective plans, * * * yet he does not undertake that his plans will be absolutely perfect, and is liable only for a failure to exercise reasonable skill in the preparation of the plans. Furthermore, if he be employed to superintend the building, he is not liable at all hazards for every defect in its construction, but is only required to use reasonable care and diligence in seeing that the work is properly done. The mere fact, therefore, that some of the material is defective, or that some of the construction work is not done in a workmanlike manner, is not sufficient to establish as a matter of law that he has not fully performed his contract. Under such circumstances, the question whether or not he used reasonable care and diligence in superintending the work is a question for the jury. * * * Take, for instance, the stucco work, which is one of the largest items of damage claimed. The defendants testify that they, who had been occupying the house, could not discover its defective condition until after the time the amended answer was filed. It had only recently begun to peel off. While it is doubtless true that an architect has better means of observation and detection, yet it cannot be said that the evidence conclusively shows that plaintiff, by the exercise of reasonable care and diligence, could have discovered the defective condition of the stucco before it began to fall off. Notwithstanding the proof as to its condition, it was for the jury to say, under all the circumstances, whether or not plaintiff failed to exercise reasonable care and diligence."—A. L. H. Street, in Building Age.

RESIDENCE FOR MR. JOSEPH MARZEN, SACRAMENTO
Seadler & Hoen, Architects

RESIDENCE OF MR. H. C. KEYES, SACRAMENTO
Seadler & Hoen, Architects

RESIDENCE OF MR. J. L. GILLIS, SACRAMENTO
Seadler & Hoen, Architects

RESIDENCE OF MR. J. L. GILLIS, SACRAMENTO
Seadler & Hoen, Architects

PATIO, RESIDENCE OF MR. H. M. LA RUE
Seadler & Hoen, Architects

RESIDENCE OF
MR. W. A. MEYERS,
SACRAMENTO
Seadler & Hoen, Architects

The Time to Build*

A. C. CLAUSSEN, Architect

THE time of year in which the contracts for the building of a house are let has considerable to do with the prices received. For example, a contract can be let for about 10 per cent cheaper at the present time of the year, the house to be built during the winter, than the prices one would get during the rush of the building season next spring. If only the foundation is put in now and the contract is let early in the year, enabling the contractors to get an earlier start than would be possible if the foundation were put in then, there would be a saving of from 6 to 8 per cent.

A great many people think that they can save money through being their own contractor. They figure that they will save the contractor's profit of from 8 to 10 per cent by buying their own materials, hiring their own labor and superintending the construction of the house themselves. In this they make a fatal error. Few contractors figure much for the profit on labor, since this is really an unknown quantity, on which they can merely make estimates in a general way based upon their previous experience. Since the wages paid out for labor amounts to almost half the cost of the house, it is very important that this item should be handled in a systematic manner. A contractor through his experience knows just how many men he can work to an advantage on a house of a certain size; how many common laborers he would need to supply his brick masons with mortar and brick, just what quantities and at what time certain materials are needed at the job, and knows how much work each man should turn out in a day, enabling him to keep track of their work and discharge any slow or incompetent workman.

When a man attempts to take a contractor's place, lacking all the technical knowledge and experience of the latter, his labor bill will usually amount to 25 or 30 per cent more through his not being able to carry on the work in a systematic manner. The writer has observed houses where a whole crew of men had to be laid off temporarily during the busy season of the year because the owner did not order certain material far enough ahead of time to get it when needed. Men do not stay idle during the busy season in the building line, and a crew laid off in this manner will immediately look for other positions, thereby leaving their former employer handicapped for the lack of labor when the work starts again. The owner is often unable to get enough men together again to carry on the work properly. Those whom he does hire under these circumstances know nothing about the work that has been done and have to study into the matter all over again, unless a competent foreman has been engaged with a salary above the union scale, whose salary would go on whether the work was going on or not. I have also noticed bricklayers mixing their own mortar and carrying their own bricks when the home-builder should have had common labor to do this work for him instead of paying a man $4.50 to do work that could be done just as well by cheap labor. Also, the workmen on a house built for the owner himself know that they will probably never have occasion to work for this man again; they know he is incapable of judging the amount of work that should be done in a day and is not apt to discover minor imperfections in the work. These facts have a demoralizing effect over the workmen which means poorer work done in more time than when they are under the guidance of a man whom they hope to work for throughout the year.

When it comes to the buying of materials, while a man may be able to get some one or two things at low cost through having some friend or relative in the business, taken as a whole the material throughout the house will cost the

* Pacific Builder and Engineer, Seattle, Washington.

homebuilder more than they would cost a contractor. For example, a contractor of any importance will buy his cement, flooring, siding, shingles, dimension lumber and other much-used materials by the carload, thereby receiving special quotations on the prices of materials ordered. The materials that he does not use on one house he can use on the next one, for he is in business for a lifetime. The final conclusion is that it is cheaper to let the contract for the entire house, except the heating and plumbing, which should be let separate, to one general contractor, after having obtained his price through competition with other contractors. He is "the man who knows." He has paid for his knowledge in the school of experience and with a properly prepared set of plans is able to carry on the work in a systematic manner. There is no line of business in which this is more true than in the building business, where so many different materials and so many different men are brought together under one man's leadership, to accomplish the building of a home. "Put all your eggs in one basket, but watch that basket."

There are other economies to be considered when the home is being planned before the matter of letting it to the contractor is considered. If the house is of frame construction or brick veneer the height of the stories should be made so that full length studding of 16, 18 or 20 feet can be used without cutting, and in laying out the floor plans care should be taken that the joists all run in one direction bearing upon one or two partitions, according to the size of the house, that extend through the center from the basement to the attic. Wherever practical the partitions on the second floor should be placed directly over those on the first floor, making the studding two stories high, thereby reducing the settlement of the house through the shrinkage of the floor joist and making it easier and cheaper to construct. Where practical the rooms should be made an odd number of feet plus two inches in the direction that the joists run. For example, a room 13 feet 2 inches wide can be spanned by 14-foot floor joist. If the room were made 13 feet 6 inches wide, 16-foot floor joist would have to be used, with nearly a foot and a half at the end of each joist going to waste, for floor joist can only be obtained an even number of feet in length, except where such length as 7 and 9 feet are required, which can be obtained by cutting joist 14 feet, 18 feet, etc., in two. As few angles should be made in the outside walls as possible, for turning corners costs money, especially in the roof. While stone always looks better than cement, a saving can be made in the sills, lintels, water table, etc., in a house of masonry construction by having them made of cement cast in forms and reinforced with rods. If this is done properly the difference can hardly be detected between the cement product and Bedford sandstone, and the former is very durable when properly made.

Good effects can be had for interior finish on inexpensive woods if a careful painter is obtained. Take, for example, clear birch, stained and grained to imitate dark mahogany, and straight grained Washington fir to imitate mission oak. They can hardly be distinguished from the genuine wood. It is poor economy, and in fact not economy in the long run, to try and economize by using little cement and more sand in the foundation, inferior grades of paint on the outside, cheap varnish on the inside finish, pine floor instead of hardwood, the cheapest heating plant in the market instead of a good hot air or hot water system, the cheapest grade of plumbing, etc. While a great many minor matters might be mentioned wherein a home-builder could economize while having his plans and specifications prepared, the advice given in this entire article might be summed up in one sentence: Engage the services of a competent architect. He makes a special study of these matters, since his reputation depends entirely upon the manner in which he serves his clients' interests. It is his business to compare the size of a home with the amount a man desires

to invest and apply strict economy wherever practicable. An architect cannot, however, entirely control the cost of a house. When a home-builder wants a house of a certain style, with certain things on the inside and outside, he should expect to pay for those things and not expect his home to cost no more than a house one-third smaller and not finished as elaborate in detail as he would have his own. System is the word. When constructing a home or building it should be applied from the first to the last.

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* *

A New Director of Federal Architecture

THE committee recently appointed to standardize future Federal buildings throughout the country appears to be proceeding in a manner that can hardly inspire confidence in the wisdom of their course, says an exchange.

Since the repeal of the Tarsney Act the capacity of the bureau has been so severely taxed that already it is said to be several years behind in its work, a situation that is aggravated by the refusal of Congress to appropriate the necessary funds for increasing the drafting force.

As a means of remedying the present intolerable conditions the chairman of this new committee is reported to have stated—not that the drafting force would be augmented by a sufficient number of competent men to successfully cope with the situation—but that "there would soon be a good place paying $8,000 a year for a first class business man who also knows architecture." According to the report the holder of the "good place," who it is proposed shall be a civilian, not under the civil service rules, will take precedence over the present Supervising Architect of the Treasury, and will be responsible for all of the public buildings hereafter erected just as the Supervising Architect is now responsible. In other words, the proposed new official is expected to direct the policies of the Bureau of Buildings, and the so-called "Supervising Architect" is apparently to be relegated to the position of chief draftsman. The expediency of such a shifting of title is not obvious from any legitimate viewpoint, and the farce is unlikely to increase the respect of the public toward its perpetrators.

It would seem, moreover, that the "first class business man" who succeeds in meeting the requirements of his position by actually standardizing government buildings will give little evidence that he "also knows architecture," for the two conditions are contradictory. The proposal of the committee, as reported, is to formulate stock designs for government buildings to be located in cities and towns of varying populations—that is, the same design for future postoffices is to be used in a farming community of 10,000 people in northern Maine, and in a town of the same size suburban to San Francisco.

Such an absurd proposition lacks that very practicality upon which the sponsors of the new movement so pride themselves. Quite aside from any effete considerations of appearance or of congruity of style with neighboring buildings, there are matters of local convenience or necessity which are rarely identical in any two cases. The very magnitude of the country, with its widely divergent climates, presents an almost insurmountable obstacle in the way of adopting even a general American style and to seriously propose that a single stock design for a postoffice—for example—is appropriate for every section of the country, is preposterous. The local availability of certain materials must also affect any well-considered design and often be a great factor in its cost. A regime of a few years under this policy of standardization induced by politicians is likely to be an expensive experience to the country, not only in increased money outlay but in the decreased efficiency of future Federal buildings and loss of artistic qualities in their architecture.

The Relative Positions of the Engineer and the Architect in Designing Commercial Buildings

IT IS difficult to define the true functions of the engineer and the architect in designing and constructing modern commercial buildings. Before the development of our high steel frame buildings, and before reinforced concrete had attained prominence as a structural material, the problem of building design was essentially an architectural one. If the engineer's services were required at all it was only in connection with the foundations, and even then he was consulted only where conditions made the design and construction exceedingly difficult. Due to the development of our steel frame and reinforced concrete buildings, however, conditions have changed and the design of these structures is becoming more and more an engineering problem. In such buildings strength and durability are of greatest importance, and to insure these qualities in building construction requires the services of engineers. It is only natural, due to the gradual development of commercial buildings, that in present building organizations the architect is supreme, while the engineer is placed in a subordinate position. In the more prominent architectural firms there have been established engineering departments, in charge of engineers who sometimes are given the dignified title of "Chief Engineer." In most cases the building is planned almost entirely by the architect, and the engineer must make his steel or reinforced concrete design conform to the architectural design. In some cases this has resulted in structural monstrosities and in exceedingly expensive structural designs.

If the architect is sufficiently broad-minded, and if his training and experience have been of the right kind, he will have felt the advisability of permitting the engineer to assist materially in planning the building. However, as the final decision lies with the architect the tendency is to over-emphasize the architectural features to the detriment of the engineering design. In making this statement it is realized that the architectural treatment of a building is of great importance, but in most commercial buildings safety and permanence are essential, while low cost is often absolutely necessary if the structure is to be financed. The latter factors give increased emphasis to the engineering design. Most architects have received their initial technical education in our universities, and the present tendency of architectural schools is to give less emphasis than formerly to mathematics and to those subjects which teach fundamental engineering principles—and more emphasis to the aesthetic design.

We believe that the design of many classes of commercial buildings should be in charge of engineers and that the architectural features of such buildings can well be taken care of by architects in the employ of these engineers or by engineers who have gained sufficient knowledge of architectural principles to enable them to design structures in which aesthetics has been duly considered. We also believe that engineers have not been sufficiently alert to their interests in permitting conditions to come about such as now exist in the building field. Furthermore, the engineer's position will not be improved unless he takes more active steps than formerly to protect his interests. Due mainly to the organized activity of architects, laws have been passed in some states which require that all building designs must be in charge of and signed by licensed architects. This has acted further to bar the engineers from activity in the building field. It is, of course, true that engineers can qualify as licensed architects by passing the required examinations. Under existing conditions, however, this is difficult, as the board of examiners is composed of *architects*—men who frame the examination questions from an architect's viewpoint.

One serious phase of the question, from an engineer's standpoint, is that, under existing conditions, contracts for building designs and superintendence naturally come to architectural firms, the business dealings being between *owner* and *architect*, the engineer getting a small share of the business from the architect—not from the owner who furnishes the necessary capital. We believe there is a legitimate field in building work for both the engineer and the architect, but we are convinced that in designing certain classes of commercial buildings the engineer should be supreme. The latter is certainly neglecting a promising field when he does not exercise his right to negotiate directly with the owner in obtaining contracts for building designs and superintendence.—Engineering and Contracting.

* * *

The Value of an Architect's Services

COMMENTING on the practice (unfortunately still prevalent to a limited degree in certain quarters) of planning buildings of more or less importance without the assistance of an architect, who is, however, called in, after the planning and general design of the building has been determined, simply to "dress it up a bit," Mr. Electus D. Litchfield writes the Evening Post, New York, as follows:

In the old days there were so many untrained and incompetent architects that it can be understood how such a course might have been adopted. But, today, with the multitude of well-trained practitioners, such a proceeding can only be explained by complete ignorance of the architect's methods and capabilities. For the benefit of those who are unaware of it, let me say there is no building operation or feature of a building operation upon which the architect—and, of course, I mean a capable and well-trained one, just as when one is advised to consult a lawyer, an immature law student without balance or experience is not meant—can be consulted without advantage to the owner. To thoroughly appreciate this, one must understand the theory of modern architectural practice, the basic theory, which has been the great contribution of the Ecole des Beaux-Arts in Paris to the architecture of this country—and I may perhaps fairly say, to the architecture of the world—and that is that the plan is the fundamental thing that predetermines the success or non-success of any building or group of buildings. There may be buildings, commonplace or even unpleasing in appearance, with successful plans, but a really successful building in any particular is hardly possible with an unsuccessful plan. For that reason the study of plan has become the great study of the modern architect. * * *

It is high time that those interested in buildings, for rental or for sale, be they apartments, lofts or office buildings, recognize two facts: first, that the practical planning of a building, together with an appropriate and pleasing facade, determine in a great measure its real value; and second, that it pays much better to decorate a building inside and out with brains, rather than gold leaf.

For too long have the operators been carried away with the idea that a lavish display of solid bronze and expensive marbles produce the most effective corridors; that a wealth in ornament, be it in white marble or terra cotta, will enable them to obtain a pleasing and imposing facade. It is time that they realized that good planning, well studied proportions and a modicum of appropriate and carefully designed ornament are the elements which produce successful buildings. It is also time that they appreciate the fact that these can be obtained only at the hands of an experienced and well-trained architect, and that an architect can, with the use of the most modest priced materials, obtain a building more appropriate and with more enduring charm than the untrained man with the highest priced products of the quarries and the mines.

The truth of Mr. Litchfield's statements, comments the American Architect, has, of course, always been realized by members of the profession, and indications are not lacking that a rapidly increasing number of operators and investors are accepting it each year. The field of the architect's activities is rapidly widening, until it now embraces—to a limited degree perhaps in some instances—practically every class of building or structure erected. All that is

necessary to make the employment of an architect the first step in any building operation, is the education of the layman to a full appreciation of the architect's methods and functions. To this work of education, Mr. Litchfield's article forms a worthy contribution, and it is hoped that every architect will, as opportunity offers, render a similar service.

*

* *

Protest Against Destruction of Works of Art Abroad

GEORGE F. HAMMOND, an architect of Cleveland, Ohio, has started a movement in this country to protest against the destruction of historical buildings and works of art in the present conflict in Europe and has addressed a letter to the architects of the United States courteously expressing his views and asking the co-operation of the profession. The letter is as follows:

Dear Sir: I have taken it upon myself to get an expression of opinion from as many members of the Institute as are willing to answer this letter in regard to the destruction of works of art and historical buildings by contending nations in the present conflict in Europe.

Owing to the fact that so many of the European countries are at war it seems to remain for the architects of the United States to protest against the unnecessary destruction of works of art and architecture.

While an expression of opinion will naturally be personal it should, as a whole, and representing as it will the sentiment of individuals, have some weight, not alone with foreign citizens in general, but with foreign officials to whose attention it will undoubtedly be brought.

It is because what is everybody's business is nobody's business that I have seen fit to take the initiative in this matter. I do not see that a protest of this kind can be received except in the respectful spirit in which it is offered; it is therefore couched in moderate terms.

I am sending a copy of this letter and enclosure to each Fellow and Member of the Institute.

Trusting you will sign and return the enclosure at your earliest convenience in order that the matter may be brought to the attention of the president and acted upon, I remain,

Very truly yours,

GEORGE F. HAMMOND,
Fellow of the American Institute of Architects.

Those who are in sympathy with the movement are asked to sign the following letter and send it to the President:

To the President, Washington, D. C.

Sir: We, the undersigned, Fellows or members of the American Institute of Architects, desire to call your attention to the reported destruction of works of art and buildings of architecture or historical interest by the contending armies in the present European war.

We request that you will take such action as in your judgment may be advisable to bring to the notice of our ambassadors for proper presentation to the rulers of all nations, this, our expression of opinion.

We believe that the works of art and architecture belong, in a sense, not exclusively to the nation holding them, but to the entire world.

We believe that the destruction of this class of property, which cannot be replaced, is not a necessary or justifiable act.

We believe that, however great the provocation, other methods of obtaining redress may be used instead of depriving this and future generations of the benefit of the study of works of art and architecture produced by those who have preceded them.

We therefore request you to bring to the attention of the world in general our views in such a manner as you may deem advisable.

Respectfully,

_____ _____

Destruction of Priceless Stone

IN ALL history there has never been a war so destructive, not only of human life, but also of the work of man's hands, as the present one which is devastating Europe. Entire cities have fallen from shells and fire, and some of the finest buildings that have come down to us from mediaeval times are now no more than heaps of ruins. The whole world mourns the loss of magnificent examples of masonry and stone carving that can never be replaced. When the war is over, and when the nations have recovered from financial and business disturbance, there is bound to be an enormous amount of building to replace the structures that have fallen, even though some of the great edifices can never rise from their ashes.

The greatest regret throughout the world, says Stone, has been expressed over the fate of the wonderful Cathedral of Rheims. This has everywhere been held as one of the most magnificent examples of Gothic architecture anywhere in existence. It was at first reported that this was totally destroyed, but now it is known that the principal loss was the roof, the interior and the fine wood work. Of course there are scars from cannon shots on the exterior walls, and many of the quaint statues that adorn the façade have been chipped and mutilated. But the Gothic architects built for all time, and with honest stone masonry. It would take more than a bombardment with high-power modern shells to shake their walls so as to impair their integrity. One of the particular glories of the Rheims Cathedral was its marvelous system of flying buttresses, illustrated herewith. These are almost lace-like in their delicacy. There has been no indication in the despatches as to how much these suffered under the cannon fire, but they could hardly have escaped in a bombardment that totally destroyed the roof.

The entire progress of the war in Belgium and France has been through a region dotted with famous and beautiful examples of stonework, and many of them have fallen. The loss at Louvain is deplorable in the destruction of the priceless library, although the building itself was not especially notable. The magnificent Hotel de Ville, another Gothic gem, escaped, and it is believed that the damage to the exquisite Cathedral of St. Pierre is not total. This edifice has the most profuse and elaborate ornamentation in the way of stone carving, the façade and side walls being miracles of dainty moulding, pinnacles, crockets, bosses and other enrichments. The great stone structures of Malines, Dinant, Nancy and other quaint towns are battle-scarred, we may be sure, although full particulars are lacking as yet.

The loss of any great memorial of the past is always to be deplored for its historical associations, even if it is possible to replace it. But we cannot replace these examples of mediaeval stone work. It is not that our architects lack the genius to plan them or our artisans the skill to carve them. Conditions of life and labor are so different now that we cannot hope to duplicate them. They were constructed by men to whom religion was a direct and daily inspiration. They gave their life to the work, and received, not princely pay, but the bare necessities of existence. What is more, the work was carried on for generations and centuries, and many gave freely of their time and treasure who could never hope to see the full fruition of their devotion. Nevertheless, if we cannot build anew such structures as those that have suffered in the war, it is certain that there will not be lacking, once the struggle is over, generous contributions from all parts of the world to restore them to at least a shadow of their former glory, if this is found to be possible. We need them as an inspiration for our builders and artisans of today.

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ARCHITECT AN AID TO AMERICAN WOMAN

The European war is causing a scarcity of women servants, the immigration statistics for August showing a falling off in the number taking passage for America of more than 80 per cent as compared with the same month in 1913. This means that the American housewife must depend more and more upon her own resources.

Commenting upon the return of the American woman to domesticity, Craftsmen says that probably the greatest aid which can be rendered the woman of the future as a housekeeper will be furnished by the American domestic architect. Whether man or woman, the builder of American homes in the future will make a very special study of the convenience and comfort of women in relation to their household problems. This does not mean that we shall have houses that are only practical, and dreary as the practical sometimes is; it means rather that as houses become more convenient, more suited to the needs of an intelligent age, they will inevitably become more beautiful, more satisfactory artistically as well as practically; that the architect, the scientist, will study all kitchen problems; that we shall find clean, wholesome, expeditious methods of accomplishing tasks that formerly were disgusting drudgery. The interior of the house, its furnishing, and its fitting will be simple as well as permanent. The minute women decide to face the difficulties of their own housekeeping they will do away with fashions in furniture and furnishings. They will decide upon a type of beautiful things such as homes were furnished with centuries ago, when women inherited the artistic comforts and decorations of their houses. And this will not lessen the beauty of American homes; it will in every possible way add to it, for articles that are made to be permanent inevitably receive imagination in conception, thought in design, and sureness in construction. One does not make or buy a poor inartistic article to live with forever.

With the reconstruction of American home life on a more humane plane of balanced happiness, there will always be found young people willing and eager to give help where they are sure of sympathy and kindness and instruction; there always will be too, the older people, the sad, the unsuccessful, who crave the opportunity of pleasant surroundings in return for service to others.

CONTRACTORS SHOULD READ CONTRACT FORMS VERY CAREFULLY

Every now and then we hear a contractor raising Cain because he got caught by a "tricky specification." Of course he blames the architect. He himself is just as much at fault. He should read the specifications—once, twice and three times, and then have somebody else read them.

The trouble is he doesn't take the time to study them. He is anxious to submit his bid and after the bid has gone in and he is awarded the contract at a figure much lower than the bids of his competitors, he wonders why. He goes back to the specifications and reads them more carefully, to discover a clause here and another clause there that mean dollars saved the owner and added expense for himself. Then the light breaks and he curses the owner, the architect and everybody else that had anything to do with the plans.

The other day we heard a sub-contractor ripping up a well-known architect for his "tricky contract form," as he called it. It seems there was a clause in the contract that he was to receive his pay thirty-five days after completion of the building. He read the contract "thirty-five days after completion of his work" which was the ornamental iron. He waited thirty-five days after finishing the job and then went to the architect for his money.

"Let's see your contract," demanded the architect.

The iron man handed it over.

"This says you shall be paid thirty-five days after the building has been finished and accepted," said the architect. "Come back again in a couple of months and if the building is completed you will get your money."

Meanwhile the ornamental iron man has about $1500 tied up—money he needs very much to meet his pay-roll.

BUILDING OPERATIONS IN THE UNITED STATES

Despite the general feeling of depression, building operations at the present time are being conducted upon a scale which very closely approximates that of the corresponding period a year ago. The reports from leading cities of the country have from month to month shown varying degrees of activity with the decreases gradually becoming less until for the month of June 112 cities report an increase of 1.7 per cent as compared with June, 1913. The larger cities of the country, however, show the greatest depression in the building industry owing in many cases to the reluctance of mortgage companies to make loans for important undertakings, the basis of reluctance in many instances being the fact that certain classes of buildings had been greatly overdone. The increases in activity are generally found in the smaller cities, towns and villages where the natural growth has demanded increased housing accommodations with accompanying business structures.

To Promote Clay Products at Panama-Pacific Exposition

For the purpose of promoting the use of burned clay products through publicity, and as a part of the initial campaign to build a modern low-cost, fire-resisting residence at the Panama-Pacific International Exposition, the directors of the recently organized Panama-Pacific Clay Products Association met at the Sherman house, Chicago, October 6th, the meeting being called by W. P. Varney, chairman of the committee of the organization. Committees were appointed to take up the work of securing subscriptions to cover the initial cost of the campaign. Manufacturers of clay products have been considering for several months past a proposition of this kind and a hearty response is confidently expected.

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Dissolve Partnership

The architectural firm of Righetti & Headman of San Francisco has dissolved partnership after several years of association, during which time the firm designed a number of splendid buildings, among them the Native Sons' Hall, Metcalf hotel, and the Crowley apartments. Mr. August G. Headman has opened offices in the Call building, while Mr. Righetti retains the offices in the Phelan building.

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Education—BERNARD R. MAYBECK, ARTHUR BROWN, JR., and JOHN BAUR.
Competitions—CHAS. P. WEEKS, WM. C. HAYS, and JOHN REID, JR.

October Meeting of San Francisco Society of Architects

The regular monthly meeting of the San Francisco Society of Architects was held at the University club, California and Powell streets, on Wednesday evening, October 14th. There were eleven members and guests present.

Mr. Mullgardt gave an interesting account of his attendance at the joint conference of the California Municipalities and City Planning Association, held at Del Monte.

Messrs. J. E. D. Trask, Director of Fine Arts, P. P. I. E.; Jules Guerin, Director of Color, P. P. I. E., and A. Sterling Calder, Chief of Sculpture, P. P. I. E., were unanimously elected honorary members of the Society.

Mr. Denivelle, the speaker of the evening, gave an extremely interesting talk on Travertine. He rehearsed the use of imitation Travertine in this country, beginning with the use in the great Salle des Pas Perdus of the Pennsylvania Terminal in New York, and its adoption by the Panama-Pacific International Exposition as an exterior finish for the exposition buildings in San Francisco. He also spoke on plaster work in general and answered many interesting questions.

City Hospital Building

The San Francisco Supervisors' Finance Committee has authorized the preparation of plans by the Consulting Board of Architects for an additional wing to the City and County Hospital, the cost not to exceed $500,000.

An Index to 1913, Architect and Engineer, will be found on the last pages of this issue.

Christian Science Church

See p. 61 above

Architect William A. Newman of San Francisco has prepared plans for a handsome Christian Science church to be erected at 34th and Elm streets, Oakland, for the Second Church of Christ of that city. The edifice will cost in the neighborhood of $100,000 and will be classic, with steel columns and trusses, brick and terra cotta exterior, limestone columns, concrete foundations and basement, red slate roof, imitation Caen stone interior, plaster ceiling, indirect lighting system, steam heat, and ventilating equipment, some marble work, tile and cork floors, vacuum cleaning, art glass windows. The above estimate of cost does not include the organ, which will cost $10,000, the furnishings and memorial windows. The main auditorium will seat 1200 persons. Quarters for the Sunday School will be fitted up in the basement. There will also be a library, committee rooms and readers' room.

Sacramento Athletic Club Building

Arrangements are being concluded by the Sacramento Athletic Club for the erection of a two-story building on the northeast corner of 11th and J streets. A building committee has been appointed of which J. M. Inman is chairman, and F. E. Bacon, secretary. The building will be 80 x 160 feet, and class C construction. The estimated cost is $50,000, and in addition to this amount $20,000 will be spent for equipment and fixtures. There will be a large gymnasium, concrete swimming tank, shower and tub baths, hand ball courts, reading room, lockers, etc.

Hotel for Yosemite Valley

Several applications with preliminary drawings have been submitted to the Department of the Interior asking permission to erect extensive hotel projects in the Yosemite Valley. Engineer Mark Daniels, of Daniels & Osmont, Monadnock building, San Francisco, who is the Government's representative, expects that approval of some of the plans will be shortly made and construction undertaken and completed before the contemplative rush of 1915 occurs.

Will Build Homes

Announcement has been made that the conductors and other employees of the United Railroads of San Francisco have formed a $50,000 corporation to erect homes for themselves on the co-operative plan on a tract overlooking the ocean. Under the plans as outlined each stockholder will have a cozy bungalow, the architecture to vary so as to relieve the cluster of homes of a monotonous sameness. The streets will be parked and all yards will be beautified.

Architect H. C. Smith Busy

Henry C. Smith is one of the busiest architects in San Francisco. He has over $250,000 worth of new work in hand, including a $60,000 school building to be erected at Dixon; a $50,000 high school for Rio Vista, Solano county; residence apartments to be erected at Green and Taylor strets, San Francisco, at an estimated cost of $125,000, and a splendid city home for Mr. Musto, of the Musto-Keenan Marble Company.

Apartment House

Architect August Nordin, Mills building, San Francisco, is preparing plans for a seven-story steel frame class C apartment house to be erected in the apartment house section of San Francisco. The exterior of the building will be of pressed brick and terra cotta. There will be eighteen apartments of four and five rooms each, with all modern conveniences.

Residence Apartments

Architect C. A. Meussdorffer has prepared plans for a unique Spanish style residence apartment house, to be erected in San Francisco for Mrs. W. P. Humphreys. The same architect has recently let contracts for a two-story flat building on Filbert street, near Post, for Mr. Bray.

Revising Hospital Plans

All the bids for the Ventura County Hospital have been rejected and new bids will soon be called on revised plans. The architect is A. C. Martin, 430 Higgins building Los Angeles.

From the Front

Architect Albert C. Martin, newly elected president of Southern California Chapter, A. I. A., has received the following letter from Fernand Parmentier, secretary of the Chapter, who is at the front in the French army:

October 2, 1914.

My Dear Albert:

After days under fire I find time for these few lines to greet you and all the Chapter members and to let you know that I am still among the living and that the shells and shrapnels have so far dodged my head. Indeed it seems to me that I shall miss their hum and whistle through the air when I return again to my peaceful vocation in California.

This strenuous existence has benefited me physically and I may say that I feel stronger and heartier than ever after my experience in long marches and days and nights passed in fields and trenches during rain and cold and alternate sunshine.

I hope that I may soon be at liberty again and be among you to tell of my novel and interesting experiences.

Sincerely yours,

FERNAND PARMENTIER.

Mr. Parmentier left Los Angeles last June intending to visit the land of his birth, Alsace, but while crossing the Atlantic war had been declared; and, like a patrotic citizen, he joined the volunteers of his native province, and is now "in the thickest of the fray."

Attorney-General Decides Tie Bid

Acting upon the opinion of Attorney General U. S. Webb, the State Engineering Department has awarded a contract for the erection of a cottage at the Sonoma State Home to Louis Cereghino & Son over the bid of R. S. K. McMillen. Both are San Francisco firms.

The two concerns bid exactly the same figure—$15,475—and the Engineering Department was at a loss how to award the contract. The Engineer's estimate was $16,000.

The matter was referred to Attorney General Webb, who held that the Department could take everything into consideration and award the contract according to the equipment of the bidder, proximity to the work, etc. This is the first time in years two bids have been exactly the same figure in State construction work.

California Prize Winners

The Society of Electrical Development of New York recently held a prize story competition and two California competitors were awarded prizes. They are E. C. Myers of 3044 Wheeler street, Berkeley, and W. H. Gaunet of 1749 Fourth avenue, East Oakland.

Plans for State Normal School

Work on the $370,000 Fresno Normal School building will begin before the end of December. The plans have practically been completed by the State Architect. Bids probably will be called for some time this month.

Personal

Professor Paul P. Cret, of the School of Architecture, University of Pennsylvania, is reported to be serving on the hospital corps of the French army. When last heard from, he was on duty near the Swiss frontier. Mr. Leon Arnal, his former colleague at the University, is serving as a lieutenant under the same flag. In the absence of Messrs. Cret and Arnal, criticism in design at the University of Pennsylvania will be given by Messrs. Edgar Seeler, C. C. Zantzinger, Paul A. Davis and John V. Van Pelt. Professor Cret, it will be remembered, served as a member of the jury that decided the San Francisco library competition.

Edward L. Fricke, Carl J. Warnecke, Chandler I. Harrison and Harry Michelson, California boys who were attending the Beaux Arts school in Paris, have returned home on account of the war. Fricke is with Bakewell & Brown, Harrison is in Santa Rosa, and Michelson is in the office of Charles Peter Weeks.

Laurie D. Cox, for some time landscape architect for the Los Angeles park department, has resigned to accept a position as associate professor of landscape architecture at Syracuse University. His resignation has been accepted and he will take up his new work immediately.

B. Ito, who was recently granted a State certificate to practice architecture, has been appointed assistant to G. Takeda, supervising architect of the Japanese building, now being erected at the Panama-Pacific Exposition.

Samuel Arnold is the supervising architect representing Architect Robert H. Orr of Los Angeles in the construction of the building for Chinese Christian Institute, in Chinatown, San Francisco. Gaspard & Hammond are the contractors.

Architect Edward R. Neumarkel has removed his office from Mason and Market streets to 521 Sharon building, San Francisco, in the same office with Samuel Arnold.

Architect Washington J. Miller announces the removal of his office from the Oscar Luning building to the Lachman building, 417 Market street, San Francisco.

Twin Peaks Bore Contract Signed

The contract for the construction of the Twin Peaks tunnel in San Francisco has been signed by the Board of Public Works and Robert C. Storrie & Co., of San Francisco.

The contract price is $3,372,000. The tunnel is to be built within 1000 days. It will be 12,800 feet long—about two and a quarter miles.

It will be solely for railway purposes, to afford rapid transit between the business part of the city and the residence areas to the west of Twin Peaks.

Havens & Toepke Busy

Architects Havens & Toepke of San Francisco have let a contract to Robert Trost of San Francisco for the construction of a class C theater and hotel building in South San Francisco for $24,000.

The same architects are preparing plans for a one-story reinforced concrete store building to be erected opposite the theater for Messrs. Martin & Cunningham.

The same architects are preparing plans for an elaborate Peninsula residence to be erected on Edgehill road, Hillsborough, San Mateo county, for Joseph Zellerbach, of 534 Battery street, San Francisco. The estimated cost is $25,000.

Three School Buildings Assured

Architect W. H. Weeks, 75 Post street, San Francisco, is preparing plans for new school buildings as follows: Woodland, $100,000; Roseville, $45 000; Auburn, $40,000. In the case of Woodland the bonds were voted at a special election in October. Bonds for Roseville and Auburn were voted some time ago, but the work was held up awaiting a decision as to the legality of the elections by Attorney General Webb. The latter has decided that the elections were legal. Mr. Weeks is also drawing plans for the Melrose branch library, City of Oakland.

Church Plans Being Completed

Architect William H. Crim, Jr., 425 Kearny street, San Francisco, is completing working drawings for the new class C church building to be erected at the corner of Dolores and Cumberland streets, San Francisco, for the Second Church of Christ, Scientist. The feature of this edifice will be an immense dome over the main auditorium. The latter will seat 1000 persons.

San Francisco Chapter Elects Officers

At the annual meeting and dinner of the San Francisco Chapter of the American Institute of Architects, October 22, the following officers were elected for the ensuing year: President, William B. Faville; vice-president, Edgar A. Mathews; secretary-treasurer, Sylvain Schnaittacher; trustees, Henry A. Schulze and James W. Reid.

New Officers of Oregon Chapter A. I. A.

Oregon Chapter, American Institute of Architects, at their annual meeting October 22d, elected the following officers: President, A. E. Doyle; Vice-President, Folger Johnson; Secretary, Wm. G. Holford; Treasurer, J. A. Fouilihoux; Trustees, Jos. Jacobberger and F. A. Naramore.

San Francisco Residence

Architect Smith O'Brien has completed drawings for a city residence to be erected on Jackson street, west of Divisadero, San Francisco, for Mrs. Rose Buckingham. The house, with garage, will cost about $8,000.

Reviews of Recent Books

of Interest to the

Architectural and Engineering Professions

By CHARLES HENRY CHENEY

GREEK REFINEMENTS—Studies in temperamental architecture by William Henry Goodyear.

The subtleties of Greek architecture and sculpture have long been a puzzle and charm to all students, but it remains for Professor Goodyear to bring forth the first general work on the curvatures and refinements of Greek temple architecture. The fascination of splendid illustrations, which seem so clearly to prove that the Greeks purposely executed optical corrections in the long lines of their cornices, bases and columns, hold the reader in rapt attention. Undoubtedly, this work may be regarded as a most important addition to our classical knowledge, and its inspiration will certainly react upon the finer American architecture. It gathers together a great deal of hitherto unconnected and little known data and furnishes reasonable explanation of the purposes of Greek refinements. Its value is further enhanced by the description of the curves on plans found in Roman architecture.

Rarely is such a book so easy reading for the layman, yet this volume must surely stimulate whomever it reaches to a greater interest and love for a finer and fuller architecture. We commend to every architect a careful reading of it.

Published by Yale University Press. 119 illus., 248 pages quarto, $10 net; postage 40 cents.

THE HOUSE IN GOOD TASTE—By Elsie de Wolfe.

A most delightful study of interior decoration with a few well chosen illustrations. While the periods and details discussed are chiefly French, the author's intimate knowledge of the subject and the great success she has had in the practical arrangement of many fine houses at home and abroad, make this book very welcome to both architects and the general public. Good taste is such a rare and elusive quality and yet it is here so simply and clearly discussed that the book is bound to be an educative factor in our domestic architecture.

Published by the Century Company, New York, 1914. 322 pages, 55 illus., $2.50 net.

SOCIAL FORCES IN ENGLAND AND AMERICA. By H. G. Wells.

A new book of essays on varied subjects which are particularly interesting for the social discussions of American population, civilization, the "so-called science of sociology," labor unrest, citizenship, etc. While many of these subjects are near the heart of the author, he scores "Social Panaceas." Viewing the United States as a "vast sea of newly arrived and unstably rooted people," it is interesting to get the perspective of such a thinking and sincere social writer as Mr. Wells.

Published by Harpers, New York. $2 net.

THE HONEST HOUSE. By Ruby Ross Goodnow and Rayne Adams.

The ordinary small house has received so little attention that this book of well chosen descriptions and reproductions of many of the best small houses of the eastern part of the country, is most opportune. While arranged especially for the home builder, it contains only the best elements of design and explains the simple architectural principles which underlie them. There are many illustrations from photographs, with diagrams of floor plans, etc.

Published by the Century Company, New York. 322 pages, $3 net.

THE PSYCHOLOGY OF MANAGEMENT. By L. M. Gilbreth.

For a general understanding of the Taylor System and other recent studies in scientific management, this volume presents a very clear statement of the progress to date in what the author describes as the "function of the mind in determining, teaching, and installing methods of least waste." It seeks to interest and instruct manager and subordinate, employer and employee, by showing them in a practical way how to plan and perform their work so as to achieve their object with the least waste possible. How to eliminate wrong methods, how to standardize right ones are carefully considered. The purpose of the book is to summarize and arouse an interest in the subject, pointing the way to where more detailed discussions can be found.

Published by the Sturgis & Walton Company, New York. $2 net.

COLONIAL MANSIONS OF MARYLAND AND DELAWARE. By John Martin Hammond.

This romantic, naive description of some of the best colonial houses in existence is welcome, chiefly for the new and refreshing way that historical anecdote and architectural description are assembled. As the author says, he has been a collector of beautiful houses. Sixty-five photographs present enticing views of the best colonial, many of which have not hitherto been published. The book has a wide appeal and gives a rare expression of the fullness of life and gracious hospitality of the owners of these dignified old houses.

Published by the J. B. Lippincott Co., Philadelphia. Limited edition, $5 net.

PLANNING AND FURNISHING THE HOME. By Mary J. Quinn.

A small, practical and economical book of suggestions for the home maker, this volume deals chiefly with historical furniture and gives many directions, prices and details which will assist the buyer of average means.

Published by Harpers, New York, 1914. $1 net.

Other Books Received

Steel Construction, by Henry Jackson Burt, American Technical Society, Chicago. $2.75. Review later.

Early American Churches, by Aymar Emburg II. Doubleday, Page Company, New York. Review later.

Benefit of Warming Homes with Furnaces

TO SHOW prospective customers for heating equipment the advantages of the furnace for sending a continual flow of fresh warm air into their homes, the manufacturers of furnaces have prepared for general distribution without reference to any particular furnace, an eight-page booklet entitled "Warm Air the Best," from which the following extracts have been made:

Necessity compels the use of some adequate means of supplying artificial heat during many months of each year in the home or other buildings in which yourself and family spend a large portion of your lives. The health and comfort of the household or the users of any building depends to a serious extent on a proper arrangement for heating. Therefore, the selection of the best and most economical method for supplying this heat is a matter entitled to your first and careful consideration.

The popular demand for a permanently satisfactory and yet comparatively inexpensive heating plant has caused the development of the modern warm-air furnace, affording a thoroughly reliable and superior heating plant, which is at once healthful, economical, practical and satisfactory, with the material advantage of being obtainable at moderate cost. It is the oldest and most generally used method of heating the home and continues in favor because it has been demonstrated to be the correct solution of the problem of heating homes and moderate sized buildings for which no other system is so perfectly adapted.

Some reasons for favoring the furnace are:

It will pay for itself in the saving of fuel.

It will ventilate your rooms and make your home sanitary.

It is made in many styles and sizes and for all the different fuels.

It is recommended by physicians and heating and ventilating engineers.

It will warm the floors as well as the air in the rooms and furnish an even, steady heat.

It costs little to install and will give long service.

It is inexpensive to make the few repairs necessary and will last a lifetime with ordinary care.

It is simple and economical to operate. It requires little attention—only a few minutes a day.

It is most cleanly, sanitary and healthful and will furnish a quicker heat than other systems.

It will heat every part of your house or building with only one fire, affording an even, pleasant heat.

It saves floor and wall space in the rooms and halls and does away with a number of separate fires.

It does away with the dirt and ashes incident to stoves or open fireplaces, and there is less danger of fire.

Eight-Story Concrete Warehouse

Plans are being prepared by Engineer C. A. P. Turner, of Minneapolis, for the construction of an eight-story reinforced concrete warehouse, for Bekins Van & Storage Company, at Twenty-second and San Pablo avenue, Oakland. Mr. Bekins of the San Francisco office stated recently that the plans would probably be received from the East within the next few weeks and that actual construction would begin before the end of the year. The building will be put up by day labor. There will be 175 feet on Twenty-second street, 180 feet on Brush street, and a small frontage on San Pablo avenue. The Mushroom system of concrete construction will be used. Walls, floors and roof will be concrete; windows will be wired glass with metal trim, and doors will be metal covered. The estimated cost is $100,000.
cost is $100,000. The general offices of the company will be in this building, and several large concrete vaults with steel doors will be included in the improvement.

State, County and Municipal Engineering

Good Roads—Water—Sewers
—Bridges—Fire Protection

Maintenance of Oil Macadam Roads in San Joaquin County, California

By FRANK EUGENE QUAIL, County Engineer, Stockton.

[Conclusion of a paper read before the Supervisors' Convention at Merced, the first installment appearing in the September number of the Architect and Engineer.]

TO REPEAT, the excellent condition of our roads after three years' usage, is due largely to our system of patrol.

The gang outfit consists of from twelve to sixteen men in charge of a superintendent, fourteen to twenty head of stock, road rollers, oil wagons, oiling machines, material wagons, water wagons, rotary street brooms, steam heating plants, and all other minor equipment necessary for the work. The class of work handled by this outfit is that in which the entire sealing coat of the roadway is in need of replacement, where the sealing coat has become so worn as to need more extensive patching than the patrolman is able to do; or where the surface has become so rough or uneven that it is necessary to reconstruct the same. In replacing the sealing coat, heavy asphaltic oil is applied in a fine spray under pressure over the entire surface of the pavement, and covered with screenings, stone chips, or pea gravel in sufficient quantity to absorb the same. In places where the roadway has become rough and uneven, in order to repair the same, the entire surface of the roadway is scarified to a depth of the wearing surface, shaped by means of a grader, and rolled lightly into place, after which the entire surface of the pavement is given a single layer of three-quarter (¾) or one and one-half (1½) inch rock. This layer of rock is then thoroughly rolled, and forms a surface upon which an additional coat of oil can be successfully applied.

Oil is generally applied in two applications of one-half (½) and one-quarter (¼) gallons per square yard, covered with fine material to absorb the same, and thoroughly rolled. By this process of treatment, the depressions and hollows are obviated, and the road, after completion, presents a smoth and uniform surface.

It has not been found advisable to place a coat of oil upon the surface of an oiled macadam road which has been scarified, without first adding a layer of rock, for the reason that the surface of the pavement, after scarifying, has more or less oil incorporated in the fine material which was used to absorb oil at the time of construction, and an additional coat of oil without the addition of a coarser rock material would tend to give too great an amount of oil and fine material over the surface of the upper or wearing surface of rock, thereby making it soft and spongy. The sealing or wearing coat should be kept as thin as possible, so tractive resistance, and the tendency to roll or creep, be reduced to a minimum.

The gang outfit has its disadvantages as well as its advantages. It is a large outfit and involves the expenditure of from fifty-five to seventy dollars per day. In order that it be worked to the best advantage, it must be kept constantly at work, with as few delays as possible, which means that great care must be taken to have material on hand when needed, work planned in advance, and the distances of moving made as short as possible.

The auto patrol outfit consists of a three (3) ton gasoline truck having a box body fourteen (14) feet in length, six (6) feet in width and fourteen (14) inches in depth, upon which is mounted, on a platform five and one-half (5½) feet square and directly in rear of the driver's seat, a four-horse steam roller, 250 gallon oil tank, 100 gallon water tank, and a 3x2x3 steam pump. Behind the platform, upon which the boiler, tanks and pump are mounted, there is still left eight and one-half (8½) feet of the bed of the truck in which to carry the material. The truck is also equipped for towing a thousand gallon tank of oil. In places where the condition of the roadway is such that it is impracticable for patrolmen to repair the same, and at the same time would hardly justify the repairing of the same with the gang outfit, the auto patrol is used. It requires but four

men to operate this outfit, namely truck driver, oil man, and two laborers.

The truck driver's duty is to attend to the moving of the truck back and forth along the road when engaged in the application of oil. The oilman attends to the steam boiler, and the spraying of the oil upon the surface of the roadway. One laborer works upon the truck in covering the oil with fine material as soon as it is applied by the oilman. The second laborer works in advance of the truck, sweeping the dust and dirt from all spots to be oiled.

In the use of this outfit, it is necessary that all material used in the work be placed along the road in piles in advance of the work. This, however, may be done at seasoins of the year when it is impracticable to apply oil, or they can use material from the patrolmen's supply.

The method of placing the sealing coat is essentially the same in nature as that described as being done by patrolmen, with the exception that the oil is applied in a thin spray under pressure by a steam pump. This outfit has proven to be a very handy outfit, the expenditure per day for labor being small. It is able to move rapidly when not engaged in actual work of applying oil, and can carry a sufficient supply of oil in a tow wagon whereby it can leave headquarters for the period of three or four days, stopping at the nearest stopping place. No large expense is involved in moving it from one part of the county to another, as would be the case of a large or gang outfit.

Two forces, consisting of from twelve to eighteen county prisoners, are employed constantly upon the improved highways. Each of these forces is in charge of two deputy sheriffs, one of whom directs the work upon the roadway, and the other acting as guard. Each force is provided with an auto truck, one of which is a light, fast truck, capable of traveling from twenty-five to thirty miles per hour, and of working at as great a distance as thirty miles from headquarters. Each gang returns to headquarters at night. The nature of the work performed by these forces consists in the spreading of screenings, stone chips or pea gravel upon the surface of the oil macadam highways where the same has sweat and excess oil appeared upon the surface. These forces also, at times, work in conjunction with the gang outfit in the spreading of rock and covering of oil with screenings, stone chips or pea gravel. The truck used for their transportation is used on the work in hauling material and distributing it for their use.

In the winter seasons, when no difficulty is experienced with oil coming to the surface, the forces are kept at work in filling up the depressions on the water bonded macadam highways, opening up water-ways of culverts, painting bridges, clearing vegetation from wings of bridges, unloading cars of material, and various other odd jobs. One great advantage of these forces is that they are always available on demand. If these forces were not available, it would be necessary, during the summer, to employ some sort of hired labor forces.

The money value to the county by reason of the labor performed by these men, estimating at 18¾ cents per hour, has amounted to $7586.25 for the year ending January 1, 1914, and I would recommend that prison labor be utilized more generally in the counties of our states as being not only better for the men, but for the value of the work they can render to the counties. As a rule, we have found them to be very good laborers.

The cost of such maintenance, as I have described, may perhaps be of interest to you. The cost of the patrol system of maintenance has been from $110 to $125 per mile per year. This is exclusive of the work done by the general repair gang or auto patrol, and the general overhead expense of the department which will run from $100 to $175 per mile per year, making the total cost of maintenance not to exceed $300 per mile per year.

We in San Joaquin County have not exceeded this amount, our cost for the year ending January 1, 1914, being $225 per mile per year, and this expense includes the cost of a considerable amount of equipment that was purchased and should not be made a charge to one year. Judging from experience in our own county, and from that of other states where anything like a systematic attempt has been made, to ascertain the cost of road maintenance, I would place the cost per mile per year to be from four to five per cent of the original cost of the road per mile, especially is this true for oiled macadam roads.

The amount of money being expended in road improvement in this state is very great in my opinion, calls for a much more systematic method of maintenance of the roads when they are constructed, than any that is provided by our statutes, and I believe that the majority of the members of the boards of supervisors of the state are in accord with the idea. Any improvement built by man begins to deteriorate as soon as completed and in use, and especially is this true of our highways, for no highway yet built will wear indefinitely, without repair.

And unless we have some well regulated system of maintenance to care for them when once they are constructed, the money expended in construction for the greater part will be wasted, and the roads will be worn out long before the bonds are paid.

Criticism of a Competition

Recently an organization in the state of Minnesota, says the Improvement Bulletin, asked architects to submit plans in competition for a building to cost about $25,000. The request said "sketches," but the wording of the announcement and the details given seemed to indicate that the organization really had in mind that each competitor would submit a pretty complete outline of the structure, interior and exterior, from basement to decorations. Possibly the word "drawings" would more exactly describe what was wanted. The building committee, it was stated, reserved the right to reject any or all sketches.

Perusal of this proposition, which is another instance of lack of provision to give the unsuccessful competitor any compensation, prompted a St. Paul architect to write some letters to the building committee. In the first letter he said:

"Please send me full information in regard to your competition. If the following questions are not included in the program and you are at liberty to answer them, I would appreciate it:

"Will there be a consulting architect or architects to help the building committee make a decision, or will the building committee judge the designs submitted?

"What fee will the successful architect be paid and will this fee be included in the $25,000 mentioned as the cost of the building?

"Thanking you for information, I remain,

"Yours very truly.

"....."

In the second letter, he had much more to say, viz:

"Not having received a reply to my communication of Sept. 5, I take the liberty of assuming that the building committee itself would judge the drawings in your competition (?) That was the reason I wrote as I did. Were three doctors to diagnose a case three different ways would you or your committee attempt to decide which was the best diagnosis or would you call in a fourth doctor? Have you or any of your committee ever called in two or three doctors or two or three lawyers on some case, had each one diagnose or advise, select that diagnosis or piece of advice which appeared to you to be the best and then dismiss the others without remuneration? Were three such professional men to offer to do such a thing would you respect their talents?

"Yet such, indeed, is what your committee is asking for when you institute a competition such as was published in a builders' magazine recently. It is well to remember that seldom does anyone get anything for nothing and an architect's time and ideas are his bread and butter.

"If possible, I shall make this and my former letter open letters, and endeavor to have them published in an effort to correct an abuse that is too prevalent.

Yours very truly,

"....."

The architect failed to receive an answer to either of his letters, which convinces us that unquestionably the only entirely fair way to conduct a competition includes provision to pay each competitor for the expense of preparing the plans. This will not only serve the cause of right competitions, but it will yield better work. The owner will find each architect taking pains with details and showing more study in design. The public needs some education in this regard, and it is the architects themselves who must be the educators.

Two Good Contracts

P. A. Palmer, Monadnock building, San Francisco, has been awarded the contract for the concrete and carpentry work of a six-story class C addition to the two-story hotel building at 15th and Jefferson streets, Oakland, for Albert Aiken. Construction will be of reinforced concrete with wood floors and joists. Clay N. Burrell is the architect. Mr. Palmer has also received the contract to erect a seven-story class C apartment house in San Francisco for the Vrooman Estate; B. G. McDougall, architect.

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Fans vs. Fire

Despite the old saying "there is nothing new under the sun," our good friend and servant, electricity, bobs up every now and then in some new and unexpected role.

We have all heard of fighting fire with fire, but the use of electric fans as an adjunct by a fire department in putting out a blaze is surely novel.

In Boston, not long ago, a fire broke out in the basement of a building occupied by a wholesale paint and chemical concern. The fumes and smoke became so thick that it was impossible for the firemen to enter the basement or direct a stream with any effectiveness, when someone thought of electric fans. A half dozen of the ordinary sixteen-inch size were quickly requisitioned by the fire chief and their breeze directed down the stairway. As soon as the rear basement windows were broken to allow the escape of the smoke and fumes, the effect of the fans gradually cleared the basement so that the firemen could work quickly and effectively in extinguishing the flames.

Now that we are accustomed to using electricity for washing and ironing, grinding coffee and making ice cream, we need not be surprised to find electric fans adopted as part of the standard equipment of an up-to-date fire department.

"Safety First"

San Francisco's newest safety station on Market street, opposite Montgomery, has been surfaced with Carbite, a new product manufactured by E. A. Bullis & Co., of the Merchants National Bank building. This is a composition which has as a base carbide of silicon, whose particles are as hard as diamond dust and which prevents the cement surface from becoming slippery. As the other ingredients of the composition make the surface absorption proof, it dries off quickly after a wetting, and the danger from slipping upon a smooth, slippery surface is reduced to a minimum. Carbite was created with this "Safety First" idea in view.

These advantages together with its doing away with floor dust were the reasons why it was also used to generally improve the sanitation of the cement floors of the new Oakland City Hall.

While it has been developed for sidewalks, railway platforms, and floors in loft buildings, garages, power plants, etc., Carbite may be used on any horizontal area and other uses may be found for it.

Runaway Road Roller

Annual reports of city departments, as a rule, are rather uninteresting reading. Now and then, however, an official varies the monotony of statistics by chronicling some unusual happening. In the recent report of the street commissioner of an eastern city, a page is devoted to the recital of the unfortunate doings of a runaway road roller. In some manner while the fireman was cleaning the machine it was thrown out of gear. It took advantage of the opportunity and immediately started down the street. The engineer tried to stop it by chocking, and this failing, boarded it and tried to steer it. The machine, however, struck the curb, and the pavement being slippery, skidded, crossed the street and collided with a house. The latter was somewhat damaged and partially removed from its foundation. In addition $14.75 worth of china in a closet was smashed and $27 worth of bric-a-brac in the front room was demolished. The inventory of the damaged property made interesting reading for the neighbors of the owner.

Bridge Reported to Be Sinking

A press dispatch from Marysville under date of October 29th says: "Citizens of this city are becoming alarmed at the manner in which the west end of the new concrete bridge over the Feather river is slowly sinking. Within the last few months it has sunk several inches, and it is feared that with the heavy rains and attendant high water it will be washed away.

"The bridge was finished only a year ago, and was accepted by the local City Council over the protest of County Surveyor L. B. Crook, who declared the piers did not go down to bedrock. It was constructed at a cost of $30,000. In addition to having sunk several inches, the structure is also cracking at one end."

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By the Way

Some Industrial Information Worth the While

A Real Convenience of the Modern Home

Among the many modern conveniences now found in the high-class residence, the "Prometheus" Electric Plate Warmer is one whose usefulness and handsome appearance are alike acknowledged.

The chief function of this appliance is to keep delayed meals or courses in prime condition for serving, however long the wait. The amount of electricity consumed in the operation of this device is very moderate, and being always ready for instant use soon becomes almost as indispensable as the refrigerator. As the apparatus is built to order, the result is the securing of an appliance which has an individuality and appropriateness to its surroundings that does not always characterize stock fixtures.

Although made in the East, the "Prometheus" warmer has found ready and wide acceptance among clients of discrimination and bids fair to become a standard part of the equipment of the well-appointed butler's pantry. Among recent installations of this device may be mentioned the following residences: Chas. Templeton Crocker, San Mateo; Walter D. Bliss, of Bliss & Faville, San Francisco; Joseph D. Grant, Hillsborough, and Edson F. Adams, Piedmont.

The new annex to the St. Francis Hotel will have six of these aids to good housekeeping and they are now in process of installation. The "Prometheus" Electric Plate Warmer is handled on the coast by Mr. M. E. Hammond, 217 Humboldt Bank building. Mr. Hammond is prepared at all times to examine plans, or the premises, and give his best attention to securing an appropriate and satisfactory installation.

Dyer Bros. Awarded Another Steel Contract

Dyer Bros. of San Francisco have received a second contract from the Western Sugar Refining Company. They will furnish 220 tons of steel for a new machine shop to be erected at the Potrero plant, Twenty-third and Louisiana streets. The same firm will also fabricate the steel for the main building, the order amounting to 2500 tons. Vincent Murray is the engineer.

ALFARATA RANCH SILO AND DAIRY, MERCED

ALFARATA RANCH DAIRY AND SILO, MERCED.
C. F. Wieland, Consulting Engineer.

This photo shows the concrete Silo and the dairy barns at the Alfarata ranch near Merced. This concrete Silo, which is made from the **Pratt Building Material Co.'s** washed gravel (a perfect mix), is 16 ft. x 53 ft. 6 in. over all.

There is a 10,000 gallon concrete water tank on top of the Silo and forms part of it. The Silo has a capacity of 220 tons of ensilage and was constructed with Wieland's steel forms, eliminating all carpenter work and cost of lumber.

The floors and side walls of the dairy barn were made of **Pratt Building Material Co.'s** washed gravel. Their address is Hearst Bldg., and they ship **sand, rock,** and **gravel by both boat or rail** from **Alameda, Contra Costa, Yuba, Placer, Monterey, Sonoma** and **Napa counties.**

An Electric Clock System is a Prime Necessity to the Modern School House

If it is of the best kind—***THE STANDARD ELECTRIC TIME CO'S*** make — it insures precision, uniformity and regularity in all the school sessions. The "Standard" master clock embodies the finest mechanism and the best skill in clock construction and it accurately directs and controls the secondary and Program clocks and the Bell signalling system, which in turn automatically start and time the varied exercises in the several class rooms.

A partial list of THE STANDARD ELECTRIC TIME CO.'S electric clock and program bell systems, installed in schools on the Pacific Coast

Provincial Normal School, Victoria, B. C.
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High School, New Westminster, B. C.
Western Residential School, Vancouver, B. C.
Lewis & Clark High School, Spokane, Wash., includes tower clock.
North Central High School, Spokane, Wash.
High School, Vancouver, Wash.
High School, South Bend, Wash.
High School, Elma, Wash.
West Side School, Chehalis, Wash.
Lincoln High School, Portland, Oregon.
Failing School, Portland, Ore.
High School, Oregon City, Ore.
High School, Ashland, Ore.
High School, Eureka, Cal.
High School, Santa Rosa, Cal.
High School, Woodland, Cal.
High School, Santa Cruz, Cal.
High School, San Mateo, Cal.
High School, Mountain View, Cal.
High School, Hayward, Cal.
High School, Fairfield, Cal.
High School, Alameda, Cal.
Washington School, Alameda, Cal.
Haight School, Alameda, Cal.
Grant School, Oakland, Cal.
Lafayette School, Oakland, Cal.
Swett School, Oakland, Cal.
Washington School, Richmond, Cal.
Tenth St. School, Richmond, Cal.
High School, Orland, Cal.
Lowell High School, San Francisco, Cal.
Girls' High School, San Francisco, California.
Polytechnic High School, San Francisco, Cal.
Y. M. C. A., San Francisco, Cal.
Lux School of Industrial Training, San Francisco, Cal.
High School, Patterson, Cal.
University of Cal. Farm, Davis, California.
High School, Dos Palos, Cal.
High School, Sanger, Cal.
High School, Corcoran, Cal.
High School, Santa Ana, Cal.
High School, Coronado Beach, Cal.
High School, Venice, Cal.
High School, Inglewood, Cal.
High School, Santa Paula, Cal.
Grammar School, Chino, Cal.
State Normal School, Los Angeles, California.
Intermediate High School, Los Angeles, Cal.
High School, Glendale, Cal.
High School, Banning, Cal.
High School, Brawley, Cal.
State Normal School, Santa Barbara, Cal.
High School, San Bernardino, Cal., installed over 22 years.
Washington School, Phoenix, Ariz.
High School, Bisbee, Ariz.
High School, Globe, Ariz.
High School, Reno, Nevada.
High School, Marysville, Cal.
Grammar School, Marysville, Cal.
High School, Sutter City, Cal.
High School, Lodi, Cal.
High School, Willows, Cal.
High School, Salt Lake City, Utah, includes tower clock.
High School, Greeley, Colo.
St. Martin's College, Lacey, Wash.
Heald's Business College, San Francisco, Cal.
North Pacific College of Dentistry & Pharmacy, Portland, Ore.
Mills College, Oakland, Cal.
Bible Institute, Los Angeles, Cal.
Teton County High School, Choteau, Montana.
Benedictine Sisters' Seminary, Mt. Angel, Ore.
Reed College, Portland, Ore.
Longfellow School, Fresno, Cal.
High School, Cedro Wooley, Wash.

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Moves to New Building

The L. A. Norris Company announce the removal of their offices to their new building, 140 Townsend street (near Third street), San Francisco, where they will have improved facilities for handling Clinton welded wire fabrics and Clinton wire lath.

This company has enjoyed phenomenal success for a number of years, and since the fire has supplied reinforcing fabric for a majority of the best concrete buildings in San Francisco and vicinity. The fact that it is now occupying its own home is proof of its prosperity and growth.

Granite Company Expands

A press dispatch from Porterville says: "Word has been received here that the California Granite Works, now operating at Rocklin, will move its equipment to Porterville. As a further preparation for the work which the company expects to do, A. Pernu, the president of the company, has arranged for the purchase of sixteen additional acres of granite land, giving the concern about seventy-nine acres of ground, all told.

Planing Mill Changes Name

The Totten & Brandt Planing Mill Company of Stockton, one of the best-known planing mills in the San Joaquin Valley, has dissolved partnership, Mr. Roscoe C. Brandt, retiring. The company hereafter will be known as the Totten Planing Mill Company. Mr. Totten has many warm friends in the building line, and he has been assured of good business support.

F. W. Eastman with Denison Tile Engineering Company

The Denison Tile Engineering Company, owners of the patents on Denison interlocking tile, announces through W. C. Denison, the president, that they have secured the services of F. W. Eastman as general manager.

Mr. Eastman's experience in introducing hollow tile in the West and his connection in executive capacity with the Oregon Denison Block Company, California Denison Block Company, and Los Angeles Denison Block Company make him peculiarly fitted for his new work. He is well known in San Francisco and his many friends on the Pacific Coast wish him success in his new work.

Mr. Eastman will have charge of licensing new manufacturers, in unleased territory, and promoting the interests of all firms now manufacturing Denison tile as well as those who may be licensed in the future.

Mr. Eastman's offices will be located in the Hippodrome building, Cleveland, Ohio.

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Bishopric Stucco Board

Mustering proof from the experiences of master builders of the ages, the Mastic Wall Board & Roofing Company, 601 Este Ave., Cincinnati, Ohio, are putting thunderous emphasis upon the durability of the Bishopric Stucco or Plaster Board. In practical tests it has been proved that all old objections to the construction of cement and plaster walls are wiped out by Bishopric Stucco Board, which gives a background that insures permanence.

Nailed to the studding, Stucco Board forms a rigid back in which ordinary plaster, or cement stucco is "locked in" for "keeps" by the lath dovetailed in the fashion that is found in houses which have stood for centuries.

Bishopric Stucco Board is a modern combination in which time-tried principles of successful wall building are applied. The lath themselves in the board, intended for exterior construction, are creosoted—a treatment which eliminates all possible chance of warping through dampness. This lath, imbedded in toughened asphalt mastic, is thus further insured to last—moisture-proof and fire-resisting.

Builders everywhere are showing their interest in Bishopric Stucco Board, and those who have not yet made a study of the material are invited to send for a sample. The illustration herewith gives a pretty fair idea of the way Bishopric Stucco Board is put together. The claim is made with all possible emphasis that Bishopric Walls "stay put." The use of Bishopric Stucco Board is urged on the grounds of both economy and service. It will pay any builder who wants to keep in touch with the best modern building methods to send for the handsome booklet, "Durable Homes by the Bishopric System," which will be gladly sent on request to all those interested.

Bishopric Stucco Board is sold on the Pacific Coast by I. E. Thayer & Co., 110 Market Street, San Francisco, and the Northwestern Lumber Company of Portland, Ore.

Denatured Electricity

An interesting method of preventing the improper use of electric current has been devised by an Italian engineer. The practice of making especially low rates for current to be used in electric power, heating and cooking devices is becoming more and more general, but with the ordinary constant potential current it is difficult to detect the use of lighting devices on circuits intended only for power and heating purposes.

This engineer advocates the use of special circuits on which the current is subject to extreme fluctuation of voltage at rapidly recurring intervals, which would make it practically impossible to use lamps, because of the flicker in the lights. As the current is not entirely interrupted and the normal voltage is almost immediately restored the proper operation of power or heating apparatus is not interfered with and the rightful use of the circuits for their respective purposes is assured.

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New Type of Reinforced Concrete Slab Construction

(Contributed)

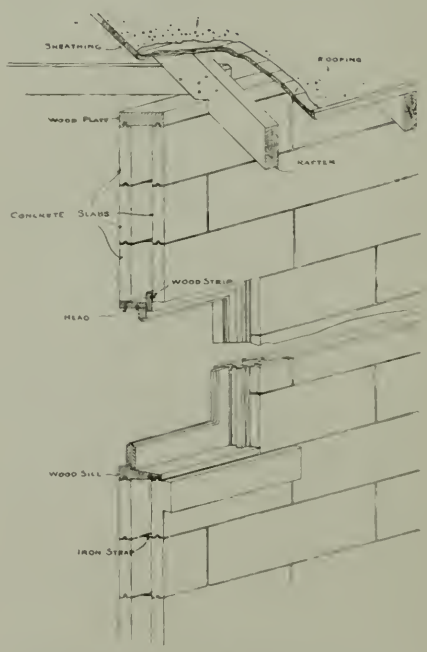
Many architects who would like to use reinforced concrete for residence work have been prevented from doing so on account of the weight and bulkiness of the material, to say nothing of the cost. Wood construction appeals to architect and owner alike, because a frame house is quickly put together at moderate expense, and it will stand the elements tolerably well.

"If somebody would invent a concrete slab that could be handled like concrete blocks, but be lighter and more artistic, his fortune would be made," is a remark frequently made, but heretofore with small prospect of ultimate realization. Concrete blocks have proved a dismal failure on account of their great weight and consequent inconvenience in handling, and also because of their crude and ugly appearance.

It has remained for a Berkeley man to invent a system of slab construction that gives every promise of filling the requirements of the man who wants a fire-proof home at a cost no greater than frame construction. John Kuivala, the inventor, declares his slabs can be used with the same permanent and artistic results as hollow tile, but that the concrete is an advantage over the tile, in that no outside stucco finish is required, though it can be applied if desired.

The slabs can be made any size, but a standard size, 8x24 is made for ordinary use. The slabs are fitted together by means of the tongue and groove, and being molded in steel forms, are waterproof and thoroughly crystalized, as there is no wood to absorb the water and prevent a perfect mixture. The slabs are made at the factory in West Berkeley and are transported to the job the same as brick or tile. Any person at all familiar with building construction can build a wall of these slabs. They weigh about fifteen pounds to the square foot, and are one and three-fourths inches thick. The outside slab has a smooth finish, while the inside slab is rough. A hollow space two and one-half inches is provided between the outer and inner wall, the two being firmly tied with a steel rod or clamp, placed at intervals along the grooved portion. If desired, rough finished slabs may be used outside, also and a pebble dash applied.

Two houses are now being built according to this new system. One has



been designed by Architect John H. Thomas and is being erected in Berkeley, for C. J. Boise; the other house is for Carl Erickson in Albany.

Mr. Kuivala, inventor of the system, has been granted patents by the Government, and he has organized the International Concrete Construction Company to carry on a general construction business with the main plant at Parker and Ninth streets, West Berkeley.

The Hauser Reversible Window

This new window is the invention of a San Francisco contractor who has given months (even years) of study to the invention of a window which is simple in construction and easily adjusted and yet is absolutely weatherproof and dust-proof. It requires no weights, cords or pulleys. It is made in both metal and wood and is equally well adapted for single and double vertical windows and for casement windows. The office is at 226 Balboa building, San Francisco.

BENNETT BROS.
Sargent's Building Hardware
514-516 Market Street, San Francisco, Cal.

The City Architect and Politics

(From the Improvement Bulletin)

Under the new commission form of government in St Paul, the city employs an architect who plans all municipal structures and acts as superintendent of construction. He receives a salary of $4,000 a year.

Since the new plan of government went into effect, a few months ago, the city architect of St Paul has had nothing to do in his first capacity as the designer of city buildings. He has kept busy inspecting the materials and work on a number of important public structures which were started before he was appointed. So we have no means of judging his work as the municipal architect, although we know of numerous buildings planned by firms of architects of which he was a member. He has in his other capacity for St Paul, shown the same activity that he had in private practice. He has given his city plenty of service and he has given contractors and architects plenty of evidence that he is on guard. Work has been stopped, material rejected. He has notified the out-of-town contractors on a large municipal building that they are proceeding too slowly and can not finish on time. At times, since this young city architect took office, the atmosphere in his immediate vicinity has been snappy with the electricity of aroused temper and charges and denials that certain contractors were "after his scalp" have been made in the daily papers. In fact the city architect has figured in the papers constantly since he began as a city official. So far, his superior, the commissioner of parks and playgrounds, who happens to be ex-officio building inspector and the responsible head of the building construction operations, has supported his appointee in all instances. That he has found so much to do, merely as a superintendent of construction, so much to criticise and correct, seems to indicate that St. Paul may not always have got what she should have got heretofore.

A city architect who can make it certain that specifications are lived up to, is easily worth $4,000 a year in that capacity alone.

A test of professional ability will come when he submits his first plans for an important city building. And this building's history from the sketches to completion will be apt to show conclusively whether it is better and cheaper to have a city architect than to award commissions to private practitioners. San Francisco has tried the plan of having a city architect and has gone back to the patronage of architects in private practice. The large force of draughtsmen has been dispersed. It is said that this change was due to convincing representations made by the San Francisco chapter of the American Institute of Architects. The city continues to employ three consulting architects.

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You can add to the operating efficiency by providing for Bowser Oil Storage Equipment.

In the Store a Bowser System will keep kerosene, paint oils and lubricants of all kinds safe underground and away from other merchandise. Oil measured and price computed at one stroke. No loss through theft, leakage, spillage, fire, or tainted wares. No necessity for leaving the store to draw oil. A Bowser equipped store inspires confidence.

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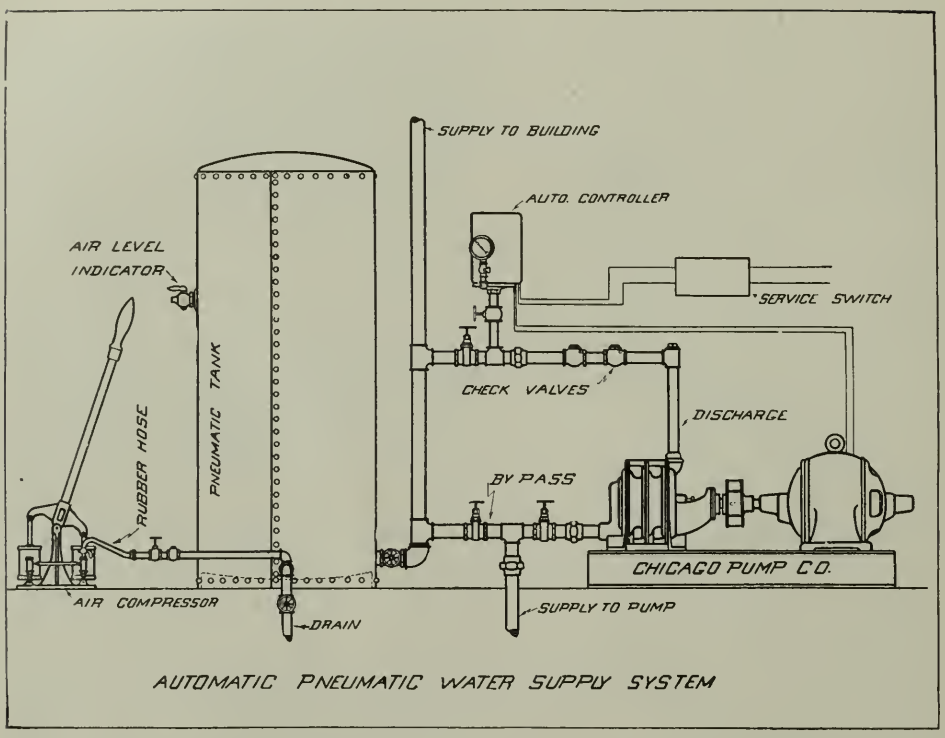

AUTOMATIC PNEUMATIC WATER SUPPLY SYSTEM

The "Chicago" Automatic Pneumatic Water Supply System

The Chicago Pump Company's automatic pneumatic water supply system has been found to be the best and most efficient yet devised. The reason for this is that it has the good points of all others, with many exclusively its own. Every piece and part that goes into the pump, motor and air compressor is designed and constructed with a tending toward securing the best results possible. This system delivers the water to the different fixtures in the building, cleaner, clearer and purer than when received by it. It is absolutely reliable in its work, does not get out of order and can be depended upon under all conditions. It is guaranteed to furnish sufficient pressure to reach any and every part of your building and is absolutely noiseless in operation—a feature which is found in no other outfit.

The system includes one turbine pump, fitted with outer board ring oiled bearings and enclosed type balanced impellers, mounted on a heavy iron sub-base and direct connected by flexible coupling to a highest grade electric motor which has sufficient capacity to operate pump without any sign of overloading or heating; one automatic pressure regulator, which starts pump automatically when pressure is low, and stops when pressure is high enough to furnish water to all floors; a steel pneumatic tank and an air compressor with relief valve. These are the parts which go to make up the Chicago Pump Company's absolutely reliable pneumatic water supply system.

The operation of this outfit is very simple. Water is pumped into the tank in which the air has already been compressed. The entrance of water causes a greater compression. This compression exerts a very strong, steady pressure being continuous regardless of whether the pump is running or not. When a certain amount of water has been forced out of the tank by the compressed air, the automatic arrangement sets the pump working, thus keeping a certain quantity of water in the tank at all times, but necessitating the operation of the pump only a very small part of the time.

The pneumatic water supply system is a vast improvement over the roof tank arrangement. The outfit can be installed in the basement, where it is easily reached. In summer the water is cooler, and in winter, warmer than that supplied from the roof tank. It will not be necessary to waste a quantity of water trying to get a cool drink in the summer, nor is there danger of freezing pipes and tank in winter. With the roof tank it is often necessary to reach the tank by climbing onto dangerous ice-covered roofs to thaw out pipes or make other repairs.

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The saving in the cost of maintenance and operation of this pump, is one that goes on month after month and year after year. The simplicity of construction of the pump permits extreme strength and insures the greatest durability. It is hardly an exaggeration to say that the working parts will never wear out. The outfit is compact in construction and can be said to be rather attractive and ornamental. It requires very little space and a minimum amount of attention. Special attention is called to the pressure regulator which is simple, rugged and of extra strength, having but a few strong heavy parts.

The system is well adapted for apartment buildings, school houses, hotels, clubs, mercantile buildings and factories where additional water pressure is required, or to pump from cisterns or shallow wells, where there is no city water. It is particularly well suited for increasing the city pressure for high office buildings. On such buildings, the pressure on the lower floors is usually too great, and on the top floors insufficient. This is overcome by using both high and low pressure tanks, at very little extra expense, in that way, giving an even pressure throughout the building.

In addition to these good points, this pneumatic water supply system tends toward the welfare and health of the community in that it purifies and sweetens the water it handles. It has been found that an electrolysis of water is effected, when the water is under an atmospheric pressure and at a temperature of 32 degrees, the liquid being decomposed into two volumes of hydrogen and one of oxygen. Hydrogen, as is well known, is one of the best germ destroyers, and consequently the water stored in the pneumatic tank is purified. This system is, therefore, of great efficiency in hospitals and other places, where pure water is necessary.

The Dahlstrom Gravity Multiple Latch

ONE of the requirements of the Board of Fire Underwriters is that swinging "fire" doors must be locked at three points, to prevent, in case of fire, the warping away from the stops, which would allow the flames to pass through. The first attempts to meet this requirement were very crude and the devices made were not suited for use in high-class work.

The multiple gravity latch or locking device recently perfected is another Dahlstrom product of unusual merit. It is designed to be entirely contained within the lock stile of a hollow-metal door and is operated by a counterbalancing weight, eliminating any springs which in a hot fire would lose their temper and make such a lock inoperative. All the principal working parts are of cast bronze, also the knobs and escutcheons, which can be of the same design as on adjoining doors in the building. The bolts are of steel, as required by the Underwriters, and are heavily electroplated in polished bronze.

All parts are mounted upon an angle shaped steel stile plate, adjusted for use, examined and labeled under the direction of the Underwriters' Laboratories. The device is applied by sliding into the hollow stile from the bottom of the door and is fastened by four machine screws through each of the face plates of the latches and two large screws in the bot-

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Current Prices of Building Materials

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(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $6.50 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $12.50 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.80 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 75c per ton, F. O. B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 11.50 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $14.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1, $35 per M; No. 2, $32; No. 3, $26.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $27 to $30.
Redwood, Rough Common, 1 x 4 and up, $22.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $22.00 to $24.00.
Redwood Rustic, No. 1, $36.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $32.00; No. 2, $28.00.
Redwood Shingles, No. 1, $2.80 full count.
Red Cedar Shingles, Star-A-Star, $3.00 full count.
Pine Lath, $250 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $120.00 per M; Select, $80.00 per M.
½ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $75.00 per M; Clear White, $105.00 per M.
White Lead in Oil, 8c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 65c gal. Raw Linseed Oil, 63c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $45.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $17.00 to $19.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21.00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31.00.
Redwood, Rough Common, $20.00 to $24.00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1¾ in. x 4 ft., $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 70c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 65c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

CHICO PRICES

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster, $14.00 per ton, ex whse.

tom of the door. It is not necessary to weaken the door by cutting away in the side of the stile for the insertion of the central lock.

On the ordinary door three bolts are generally used but more can be added for extra high doors; these bolts project ⅞-inch beyond the edge of the door, as required by the Board of Fire Underwriters. A turn of the knob pulls them flush with the edge or opens the lock, and a ratchet arrangement holds them in this position as long as the door is open. Thus there are no projections to catch in the clothing of anyone passing, which is an important point, especially in buildings where many women are employed, like offices, telephone exchanges, clothing factories, etc. In closing the door, a pin or trigger, which projects on the stop side near the top of the door, is pushed in by the stop on the jamb, which causes the ratchet holding the lock bolts within the door to be released and to enter the latch strike plates or openings in the jambs, thus locking the door.

This device is made "fool-proof" by the use of an automatic feature in the central latch bolt. If the ratchet pin is tampered with so that the bolts are released and spring into position, projecting beyond the edge of the door when the door is open, the antifriction latch bolt will when coming in contact with the lip of the strike plate, cause the bolts to retract into the door and allow it to close, when the bolts are again released and will securely lock the door.

Good Design in School Architecture

An architect in apologizing for a very uninteresting design of a small school building once said to the writer: "You cannot do much with a grade school in the way of architectural effect. After all, it is nothing but a schoolhouse." The attitude of mind of this man, who was in other respects an artist, a clever draftsman and a master of the business end of his profession, is typical of many architects who do not realize the true meaning of a schoolhouse and fail to appreciate the opportunity which it affords. There is, consequently, in their designs a fatal lack of spirit and a barrenness of results.

The children of the United States have been suffering from this kind of school architecture for many generations. In fact, the lack of appreciation of good architecture in a great proportion of our native population may be traced directly, in part, to the neglect of school boards to demand, and our architects to provide, our schoolhouses universally with high architectural qualities.

It has been said very truly that the design of a schoolhouse involves an educational obligation. The effect which every

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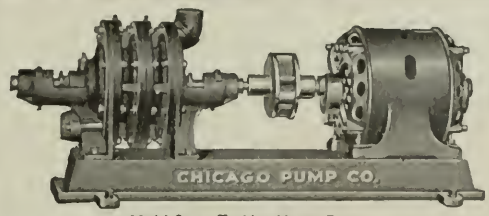

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school building has upon its occupants in the formation of their taste and love for good design and good architecture is very real. The school architect has no right to forget this and every building which he erects, no matter how limited in cost, or how elaborate, or how strong and well built it may be, fails of its true mission so long as it is not truly pleasing, artistic and inspirational from an architectural standpoint.—School Board Journal.

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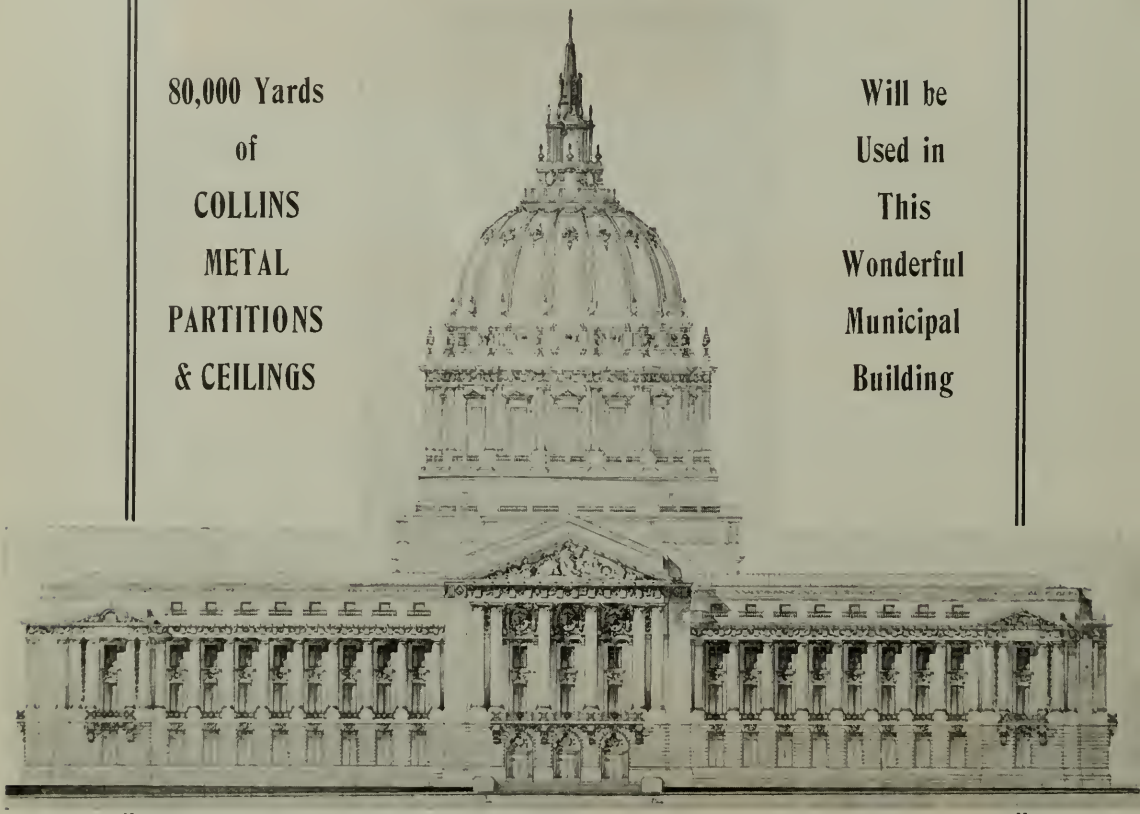

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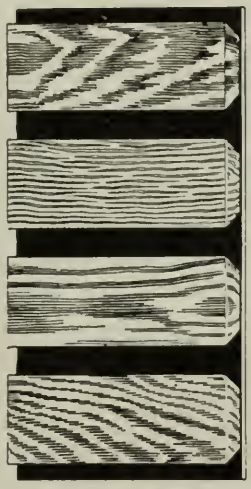

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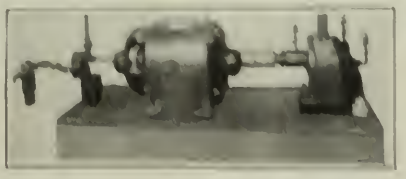

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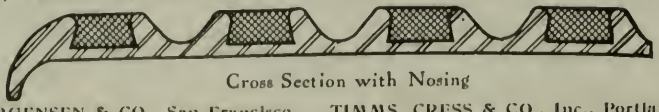

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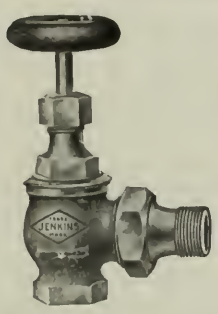

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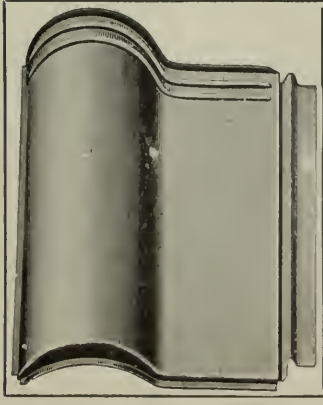

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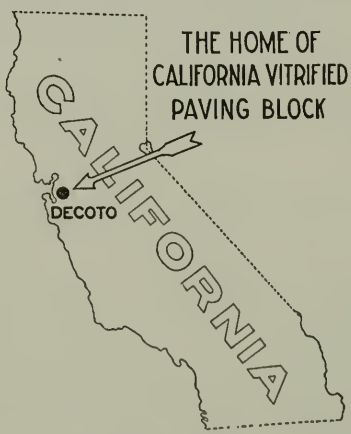

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3	"	"	"	"	"	43,127	"	"	.0625″	"	"	"	"	"	166 "
4	"	"	"	"	"	57,469	"	"	.09375″	"	"	"	"	"	221 "
5	"	"	"	"	"	116,150	"	"	.1666″	"	"	"	"	"	446 "
6	"	"	"	"	"	131,199	"	"	.1875″	"	"	"	"	"	504 "
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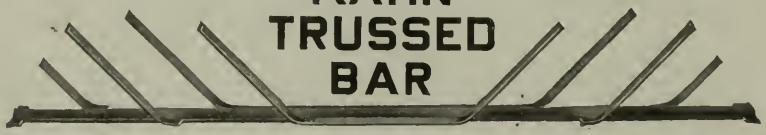

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Architect and Engineer of California, for 1913

Index to Volumes XXXII, XXXIII, XXXIV, and XXXV.

A.

ARTICLE	Month	Vol.	Page
Architecture as a Fine Art, by Carl F. Gould	Jan.	31	51
An Experience in School Building Competition, by Walter Cook	Jan.	31	91
Architectural League of the Pacific Coast	Jan.	31	96
Adding Five Stories to an Office Building, by Alexander Brociner	Feb.	32	81
Architectural League of the Pacific Coast, by Loring P. Rixford	Feb.	32	98
Advertising, by J. A. Bried	Feb.	32	104
American Architecture As Seen by the Humorist, by Geo. Fitch	Feb.	32	105
American Institute of Architects, Official Record, S. F. Chapter	Mar.	32	95
Architecture of Delhi	Apr.	32	100
Application of Tile to Concrete, by John Wynkoop	Apr.	32	102
Applegarth, Some of the Work of G. A.	May	33	47
Architectural League of the Pacific Coast	May	33	102
Automatic Temperature Regulation	May	33	107
Architecture and Its Interpretation to Men, by W. R. B. Wilcox	July	33	76
Arnold Bennett on the Influence of Architecture	July	33	97
Architect Uses Blackboard to Hold Contractors to their Schedule	Sept.	34	81
Analogy Between Horse Racing and Architecture, by G. Alexander Wright	Sept.	34	95
Architects' Fee, The	Sept.	34	98
American Institute Convention, The	Sept.	34	99
American Architecture, by F. W. Fitzpatrick	Oct.	34	88
Architecture and Dressmaking	Nov.	35	66
American Institute Will Discuss Repeal of Tarsney Act at New Orleans Convention:	Nov.	35	77
Are Concrete Form Builders Necessarily Carpenters?	Nov.	35	101
Anent The Portland Post Office Competition	Dec.	35	91

B.

ARTICLE	Month	Vol.	Page
British Columbia Competition a Disappointment	Feb.	32	89
Bungalows—How Not To Build Them	Mar.	32	89
Best Architectural Work in the United States	Aug.	34	64
Bridges in Relation to the City Plan, by Henry G. Tyrrell	Aug.	34	83
Building For Mr. W. H. O'Bear, by Milton Lichtenstein, Fron'pce	Sept.	34	
Bond Feature of the New California Lien Law Unconstitutional	Sept.	34	93
Building for the Hobart Estate, by Willis Polk & Co. Fron'pce	Oct.	34	
"Business" And the Manufacturer, by Col. Geo. Pope	Oct.	34	103
Bungled Bungalow, The, by William Schultz	Dec.	35	85
Building a House in a Day	Dec.	35	104

C.

ARTICLE	Month	Vol.	Page
Concreted Cottages in California, by Irving J. Gill	Jan.	31	67
Convent School Designed in Mission Style, by Welsh & Carey	Jan.	31	106
Concrete Warehouse With Pleasing Architectural Treatment, by Wm. H. Crim, Jr.	Jan.	31	81
Cement Production in 1912	Feb.	32	108
Competition for the Indiana Centennial Building, The	Feb.	32	109
College Sbrine in Concrete, A	Mar.	32	99
Criticism of Work of Annual Exhibition of San Francisco Architectural Club, by B. J. S. Cahill.	Apr.	32	47
Competitions	Apr.	32	98
Concrete and Brickwork for Curtain Walls, by Nathaniel Ellery.	May	33	97
Cracks in Concrete—Causes and Corrections	June	33	82
Concrete Protest, A, by Harrison Albright	June	33	90
Concrete in Its Legal Aspect, by W. Valentine Ball	Aug.	34	65
Cass Gillbert Adds to His Honors.	Sept.	34	97
Cost Problem of Architectural Exhibitions, The	Sept.	34	110
City Residence of Mrs. Fred S. Knight, The, by Ward & Blohme	Oct.	34	58
Carved Marble Furniture for the House Beautiful	Oct.	34	81
Cooking and Heating by Electricity, by Chas. T. Phillips	Oct.	34	93
Constructing a Swimming Pool	Oct.	34	104
Cuff, Clarence C., Recent Work of	Nov.	35	49
Concerning Water in Concrete Mixtures	Nov.	35	97
Cement Grout Buildings	Nov.	35	99

D.

ARTICLE	Month	Vol.	Page
Design for Hotel and Store Building, by Harrison Albright, Fr'pce	Mar.	32	
Door Detail, Residence of Mr. R. A. Rowan, Pasadena Fron'pce	June	33	
Decorating Modern Bath Rooms	June	33	103
Domestic Architecture of To-day, by William Koehl	July	33	63
Development of the Fireplace, The, by B. H. Smith	Aug.	34	102
Decoration in Architecture, by W. P. Major	Nov.	35	58
Decorative Use of Tile Flooring, The, by A. B. LeBoutillier	Nov.	35	67

E.

ARTICLE	Month	Vol.	Page
Examples of Modern Lighting Practice—Concealed Lighting, by Edgar H. Bostock	Jan.	31	118
Effect of Electricity on Concrete, The,	Feb.	32	87
English Building	Feb.	32	110
Electricity in the Twentieth Century Home, by Dr. Leonard Keene Hirschberg	Feb.	32	121
Exterior Damp-proofing	Apr.	32	107
Essentials in Concrete Road Building, by W. A. McIntyre	Apr.	32	116
Electricity in the Theater, by Chas. T. Phillips	June	33	73
Effects of Cannon on Reinforced Concrete Buildings	June	33	106
Echoes of the Architectural Convention in Portland	July	33	80
Engineers Now Will Attempt to Save Toppling Building	July	33	85
Electricity and the Architect, by Frank E. Wallis	Aug.	34	119
Electrical Equipment of San Francisco Hospital, by C. F. Butte	Sept.	34	119
Electricity and the Architect, by C. S. Walton	Oct.	34	119
Eureka's New Bank Building, by Albert Pissis	Nov.	35	63
Estimate Hazards of Building Plans, by J. M. Vollmer	Nov.	35	80
Entrance Court, Residence of Mr. J. B. Crowley, by Righetti and Headman Fron'pce	Dec.	35	

F.

ARTICLE	Month	Vol.	Page
Fifty Millions for Construction Work in San Francisco This Year	Jan.	31	61
Finishing of Hardwood Floors, The	Jan.	31	92
Fourth Exhibition of Architectural League of the Pacific Coast, Illustrated	Mar.	32	47
Fire Tests of Partitions for Buildings, by H. B. McMaster	Apr.	32	84

G.

ARTICLE	Month	Vol.	Page
Great Woolworth Building, The, by Samuel Arnold	Mar.	32	101
Ground Plan of the Earth, by B. J. S. Cahill	June	33	92
General Contractors Have a Grievance	July	33	105

H.

ARTICLE	Month	Vol.	Page
Heating Pointers, by F. H. Sprague	Jan.	31	121
Humboldt Bank Building, by Meyer & O'Brien ..... Fron'pce	Feb.	32	
How Much Will It Cost Me to Build? by Wm. A. Newman	Mar.	32	87
H. M. Howard Two-Story House, The, by Sidney B. Newsom	Apr.	32	83
Hygiene Needed for Draftsman	June	33	102
Heating of Country Houses, The, by Judson H. Broughton	June	33	121
How the Alameda County Hospital Competition Was Won, by Charles Peter Weeks	Aug.	34	47
How to Lay a Concrete Floor, by H. M. Bainer	Sept.	34	106
Heavy Dam Construction, Lake Spaulding Project, by J. A. Bried	Dec.	35	98

I.

Improvements in the National Parks of California	Jan.	31	80
Indirect Illumination, I, by Fowler Mallett	Mar.	32	119
Indirect Illumination, II, by Fowler Mallett	Apr.	33	119
Indirect Illumination, III, by Fowler Mallett	May	33	119
Intimate Theatre Idea, The, by Claude L. Hagen	June	33	79
Importance of Good Lighting, by F. Park Lewis	Dec.	35	119

J.

John D. Spreckels Building, The, by Reid Bros. ..... Fron'pce	Apr.	32	

K.

Kern County Court House, The Completed, by Frederick H. Meyer	Jan.	31	74
Keeping Costs in Building Construction	Mar.	32	92
Keeping the Cost Within the Estimate	Oct.	34	91

L.

Los Angeles Architect Enters New Field of Work, by A. F. Rosenheim	Feb.	32	97
Lichtenstein, Milton, A Few Notes on Some Recent Work of	Sept.	34	47
Los Angeles, The Home of Many High Class Apartment Houses, by Frederick Jennings	Sept.	34	65
Los Angeles' New Depot	Dec.	35	84

M.

Mistakes Architects Make, by Chas. E. White, Jr.	Mar.	32	75
Moving Merchandise Without Power	Mar.	32	106
Minutes of San Francisco Chapter, A. I. A.	Apr.	32	86
Moving a Steel Frame Building Three City Blocks	Apr.	32	99
Method of Constructing Retaining Walls, Etc.	July	33	116
Moving Steel Buildings No Longer an Experiment	Sept.	34	105
Modern Architecture, by Thomas Hastings	Oct.	34	47
Municipal Natatorium of Reinforced Concrete, A, by O. P. Shelley	Oct.	34	71
Mullgardt, Louis Christian, F. A. I. A. ..... Fron'pce	Nov.	35	
Model Civic Center for the Women's Republic Community, Atascadero, by Bliss & Faville	Nov.	35	69
Many Uses for Birch Are Recorded	Nov.	35	102

N.

New Times Building, Los Angeles, The, by Krempel & Erkes ..... Fron'pce	Jan.	31	
Norman Shaw as An Architectural Critic	Jan.	31	86
Notes on Successful Illumination, by Fowler Mallett	June	33	119
New York County Court House, The	July	33	103
Notable San Francisco Street Improvement, A, by O. P. Shelley	Aug.	34	59
Need of Honest Contractors	Nov.	35	89

O.

Oyster Shells Replace Gravel	July	33	89
Oak Flooring	Aug.	34	63
Ode to the Draftsman, by E. A. Van Deuson	Sept.	34	62

P.

Program for the Sacramento School Competition	Jan.	31	75
Pacific Coast—Past, Present and Future, The, by F. H. Glidden	Mar.	32	90
Presentation of John Fritz Medal to Capt. Robert M. Hunt	Mar.	32	104
Professional Advisor—When Not to Employ Him	Apr.	32	97
"Patent Medicine" House Planning, by V. O. Wallingford	Apr.	32	103
Profit Sharing Plan	Apr.	32	105
Passing of Wax Finish	Apr.	32	110
Proposed Los Angeles Building, by MacDonald & Applegarth ..... Fron'pce	May	33	
Plea for a Better System of Estimating Among Contractors, by G. Alexander Wright	May	33	81
Portland Auditorium Competition Jury Upheld	June	33	98
Poured Concrete Houses a Success	July	33	90
Present System of Estimating An Injustice to the Owner, by Sullivan W. Jones	July	33	106
Plea for Harmony, A, by Thomas J. Welsh	July	33	110
Parasite-Infested Architecture	Aug.	34	109
Protection of Concrete Walls From Alkali and Other Destructive Agents, The, by W. D. Rohan.	Sept.	34	76
Plea for a Cement Show at the Panama-Pacific International Exposition, by Chas. E. VanBarneveld	Nov.	35	92
Progress of Panama-Pacific Exposition Construction Work	Nov.	35	94
Passing of the "Technical Press".	Nov.	35	103
Plea for a Greater Freedom—Independence If You Will—In Architectural Designs, by W. R. B. Willcox	Dec.	35	77

Q.

Quantity System of Estimating, by G. Alexander Wright	Aug.	34	101
Quantity Surveyor, The—Who Pays Him for His Services?	Dec.	35	76

R.

Repeal of the Tarsney Act Is Deplored, by Walter Cook	Jan.	31	47
Reports of Experience with Concrete for Sewers	Jan.	31	116
Report of the Committee of A. I. A. on Government Architecture	June	33	99
Relation Between the Architect and Contractor, The, by John C. Austin	Sept.	34	63
Righetti and Headman, The Recent Work of	Dec.	35	47
Reminiscences of a Brick Man, by Charles H. Frost	Dec.	35	95

S.

Some Features of the San Francisco Girls' High School Building	Jan.	31	57
Solving Los Angeles' Greatest Waterproofing Problem	Jan.	31	79
Skyscraper of Tomorrow, The, by Theodore Starrett	Jan.	31	91
Some Good Hints About Decorating Modern Bath Rooms	Jan.	31	91
Smith O'Brien, The Work of	Feb.	32	47
San Francisco's Labor Problem, by William E. Hague	Feb.	32	90
Steel Column Connections in Reinforced Buildings	Feb.	32	106
Some Night Views of the Cities	Mar.	32	79
Skyline and City Architecture	Mar.	32	94
San Francisco General Contractors' Association in Its New Home, by William E. Hague	Mar.	32	102
Second Year of San Francisco's General Contractors' Association, by Charles A. Day	Apr.	32	88
Steel in Building Work, I, by J. R. Grant	Apr.	32	91
Structural Tones and Counter Tones	Apr.	32	108

ARTICLE	Month	Vol.	Page
Sacramento School Competition, The	May	33	65
Sketches of the Southwest Museum, by Hunt & Burns	May	33	75
Steel in Building Work, II, by J. R. Grant	May	33	92
Strength of Cement, The, by H. C. Johnson	May	33	95
Sanitation of Buildings, by Erwin L. Weber	May	33	116
Some Observations on Domestic Architecture, by Harrie T. Lindeberg	June	33	47
Standard Oil Company's New San Francisco Home, The	June	33	88
Stained and Leaded Glass for the Home	June	33	89
San Francisco Chapter, A. I. A., Official Proceedings	June	33	95
Serious and Frivolous Paragraphs of World's Progress, by Thomas J. Welsh	June	33	97
Steel and Iron Industry of California, The, I, Golden Gate Structural and Ornamental Iron Works	June	33	107
San Francisco Civic Center, The.. Fron'pce	July	33	
San Francisco's Civic Center, by John Galen Howard	July	33	47
Steel and Iron Industry of California, II, The, Judson Mfg. Co.	July	33	91
Safety in Concrete Construction, by Chas. F. Lewis	July	33	98
Southern Exposition, A	Aug.	34	71
Some Engineering Features of the Proposed Trans-bay Suspension Bridge, by L. P. Crane	Aug.	34	73
Steel and Iron Industry of California, The, III, Monarch Iron Works	Aug.	34	94
Some Examples of Recent Ecclesiastical Architecture in Southern California	Sept.	34	83
Some Notes on Causes of Failure of Stucco Work	Sept.	34	108
Scale of Wages in the Building Trades	Oct.	34	86
Selection of Architects, The	Oct.	34	107
Steel Dome of the Kahn Department Store Building, Oakland..	Oct.	34	109
Skyscrapers of Ancient Times	Nov.	35	79
Steel and Iron Industry of California, The, IV, Western Iron Works, by H. H. Morris	Nov.	35	85
School Competition Law of 1872 Declared Invalid	Nov.	35	100
"Smoke Proof" Buildings	Nov.	35	102
Some Foreign Sketches in Pencil and Wash	Nov.	35	105
Some Suggestions on Estimating, by Henry A. Hoyt	Dec.	35	73
Steel and Iron Industry of California, The, V, West Coast Wire and Iron Works	Dec.	35	105
Some Notes on Paving, by Clark R. Mandigo	Dec.	35	116

T.

ARTICLE	Month	Vol.	Page
Trying to Save a Concrete Building of Faulty Design, by Alfred Henry Jacobs	Mar.	34	84
Tallest Concrete Chimney on the Pacific Coast	Mar.	32	100
Trees, The, by W. E. Dennison...	May	33	79
Terra Cotta Walls	Sept.	34	75
Teaching of Architecture on the Pacific Coast, The, by Warren C. Perry	Oct.	34	65
Two Interesting Designs, by Welsh & Carey	Oct.	34	78

U.

ARTICLE	Month	Vol.	Page
Underwriters' Problems of the Panama-Pacific Exposition, by O. P. Shelley	Jan.	31	101
Unique Workingmen's Hotel for San Diego	Aug.	34	81

V.

ARTICLE	Month	Vol.	Page
Value of Washed Sand and Gravel in Concrete	Jan.	31	84
Value of Proper Building of Highways, The	Feb.	32	117

W.

ARTICLE	Month	Vol.	Page
What Is an Engineer? by F. N. Percy	May	33	72
Woodland High School, The New, by William H. Weeks	June	33	91
What Is a Chapter For? by Roland Adelsberger	July	33	96
Why Architects Should Understand Mill Details, by John Wavrek, Jr.	July	33	109
Weeks, Charles Peter...Fron'pce	Aug.	34	
Waste in Bidding	Aug.	34	99
Water in Concrete Mixtures, by M. D. Hite	Sept.	34	100
Western States Slow to Authorize Buildings for Panama-Pacific Exposition	Oct.	34	100
Who's Who in Pacific Coast Architecture, I—Louis Christian Mullgardt	Nov.	35	47
Warm-Air Furnace Capacities and Pipe Sizes	Nov.	35	119

Y.

ARTICLE	Month	Vol.	Page
Yearly Report of Publicity Committee, San Francisco Chapter, A. I. A., by Thos. J. Welsh	Nov.	35	77

THESE pages may be readily detached when BOOK is bound and placed at the beginning of 1913 bound volumes for convenient reference.

¶Index for 1914 will be published in January, 1915 Number.

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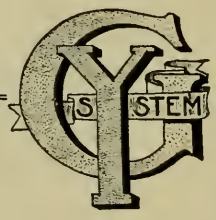
SPEED 

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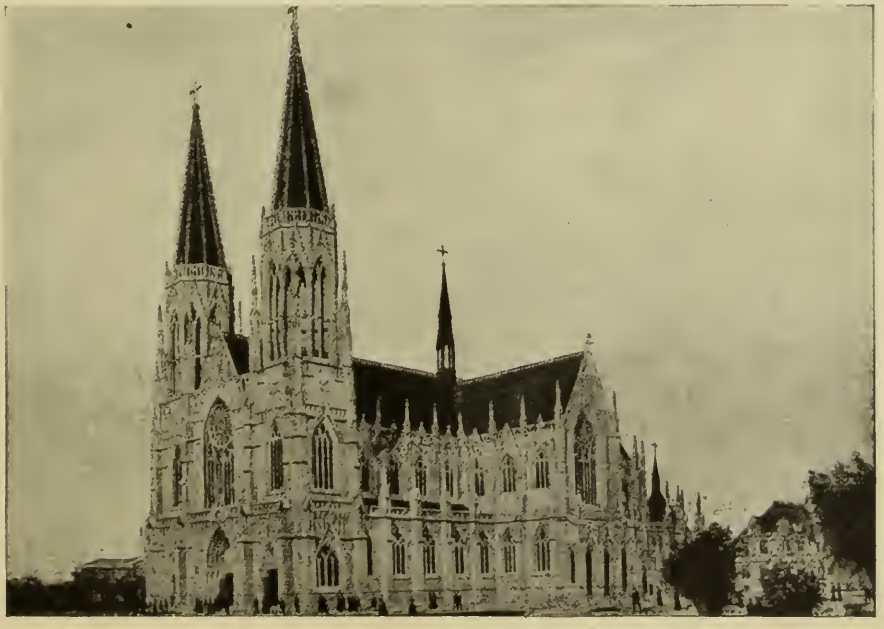

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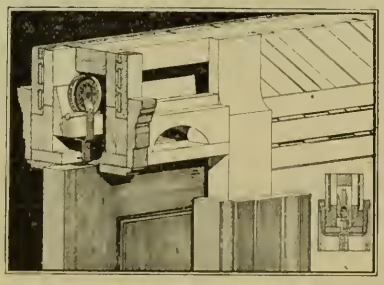

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ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see next page)

ARCHITECTURAL SCULPTORS, MODELING, ETC.
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An Index to the Advertisements

	Page
Alexander, L. & M.	152
American Concrete Co.	159
American Heat & Power Co.	27
American Keene Cement Co.	19
American Sheet & Tin Plate Co.	21
American Steel Bar Co.	33
Amweg, F. J.	138
Armstrong Cork Co.	158
Atlas Portland Cement Co.	34
Austin Cube Mixer	36
Automatic Electric Heating Company	147
Bacon, Ed. R.	142
Barrett & Hilp	162
Bass-Hueter Co.	23
Bennett Bros.	132
Biggers, A. W.	156
Biturine Co.	44
Boise Sandstone Co.	46
Boscus, J. M.	163
Bowser & Co., S. F.	133
Braun, J. G.	40
Breite, W. W.	139
Brode Iron Works	41
Building Material Company, The, Inc.	6
Bullis, E. A. & Co	26
Burdett-Rowntree Mfg. Co.	18
Burlington Venetian Blind Co.	150
Burnett Iron Works	127
Butte Engineering Co.	127
Cabot, Samuel (Inc.)	40
Caementum Paint Co.	151
Calif. Artistic Metal & Wire Co.	14
California Bldg. Material Co.	Second Cover
California Granite Co.	130
California Paving Brick Co.	158
California Photo Engraving Co.	163
California Plumbing Supply Co.	43
California Tile Contracting Co.	156
Central Electric Co.	130
Central Iron Works	41
Chalmers, H. A.	162
Chicago Pump Co.	139
Chowen, W. A.	163
Clinton Fireproofing Co.	150
Coleman, Alex	145
Collins Studding	15
Collman & Collman	163
Colonial Fireplace Co.	43
Concrete Appliances Co.	2
Cook, H. N., Belting Co.	36
Cowell Lime & Cement Co.	154
Crane Co.	43
Craycroft-Herrold Brick Co.	158
Cutler Mail Chute Co.	38
Dahlstrom Metallic Door Co.	141
Decker Electrical Co.	156
Denison Blocks	2d Cover
Diamond Brick Co.	28
Dieckmann Hardwood Co.	129
Dodge & Lathrop	166
Dolbear Curb Bar	33
Dudfield Lumber Co.	153
Dyer Bros.	39
Elevator Supply and Repair Co.	15
Electric Agencies Co.	149
Electric Utilities Co.	156
Excello Mfg. Co.	24
Ferguson, W. H.	166
Fess System	151
Fibrestone and Roofing Co.	11
Fidelity and Deposit Company of Maryland	166
Finch, Chas. M	154
Fink & Schindler Co., The	135
Firex	A
Fisher, M.	163
Fitzpatrick, F. W.	24
Flagg, Edwin H., Scenic Co.	7
Forbes, A. J. & Son	154
Foster, Vogt Co.	138
Fresno Art Glass Co.	154
Fuller, W. P., Co.	25
Gaspard & Hammond	10
Giant Suction Cleaner Co.	22
Gladding, McBean & Co.	29
Glidden Varnish Co.	161
Globe Indemnity Co.	159
Goheen Manufacturing Co.	35
Graham & Jensen	162
Granite Press Brick Co.	166
Grant Gravel Co.	7
Gravity Spiral Chute Co.	18
Hammond, M. E.	151
Hardwood Interior Co.	22
Hardy, Jas. H	132
Hauser Reversible Window	154
Hausmann, L. M.	162
Haws Sanitary Drinking Fountain	18
Hillard, C. J., Co.	42
Hoffman Heater	33
Holloway Expanded Metal Lath Co.	143
Holmes Lime Co	9
Home Mfg. Co.	138
Hunt, Robt. W. & Co.	129
Hunter & Hudson	130
Imperial Waterproofing Co.	24
Improved Sanitary Fixture Co.	135
Independent Sewer Pipe & Terra Cotta Co.	159
International Concrete Con. Co	37
Invincible Vacuum Cleaner	165
Jarvis, T. P.	46
Jenkins Bros.	153
Johnson, S. T., Co.	13
Jorgensen & Co.	39
Kinnear Rolling Doors	44
Knowles, A.	36
LeDeit, Sylvain	149
Lithoid Products Co.	43
Livermore Fire Brick Co.	44
Los Angeles Pressed Brick Co.	20
Lynch, A.	162
Mackenzie Roof Co.	139
MacMeans Co.	166
Mangrum & Otter	18
Marshall & Stearns Co.	39
Massachusetts Bonding and Insurance Company	130
McCabe Hanger Co.	138
McKibben & Taylor	149
McLaren & Peterson	..
McShane Bell Foundry	3
Medusa Portland Cement	6
Meek, T. H.	159
Meese & Gottfried Co.	144
Merritt Ironing Board	42
Meurer Bros.	157
Moller & Schumann Co.	19
Monk, John	160
Monson Bros	162
Mortenson Construction Co.	10
Mosaic Tile Co.	163
Mott Iron Works	149
Municipal Engineering Co.	36
Muralo Co.	27
Musto-Keenan Co.	12
Nason, R. N., & Co.	12
Nathan, Dohrmann Co.	145
National Lumber Co.	4
National Roofing Co.	14
Nelson, N. O.	24
Niles Sand, Gravel & Rock Co.	28
Noble, A. E.	149
Norris Co., L. A.,	Inside Front Cover
Otis Elevator Co.	Back Cover,
Otto, W. H.	154
Owsley, Bert	149
Pacific Building Materials Co.	3d Cover
Pacific Coast Casualty Co.	166
Pacific Fire Extinguisher Co.	36
Pacific Gas & Electric Co.	152
Pacific Gurney Elevator Co.	138
Pacific Hardware and Steel Co.	Inside Front Cover
Pacific Imp. Co.,	Outside Back Cover
Pacific Portland Cement Co.	1st and 4th Cover
Pacific Rolling Mills	41
Pacific Structural Iron Works.	159
Pacific Sewer Pipe Co.	29
Palm Iron Works	42
Palmer, P. A.	166
Paraffine Paint Co.	17
Parrott & Co	15
Perfection Reversible Window Co.	151
Petersen, H. L.	9
Peterson-James Co.	146
Phillips, Chas. T.	166
Pitcher Door Hanger	4
Pittsburg Heater Co.	140
Pneulectric Co.	149
Pratt Building Material Co.	128
Prometheus Electric Co.	151
Ralston Iron Works	42
Ransome Concrete Co.	130
Reliance Ball-Bearing Door Hanger	131
Riggs, Arthur T.	139
Roberts Mfg Co.	159
Rognier & Co.	145
Roman, C.	151
Russell & Erwin Mfg. Co.	30
Samson Cordage Works	130
S. F. Metal Stamping and Corrugating Co.	38
S. F. Elevator Co.	162
S. F. Pioneer Varnish Works	23
Santa Fe Lumber Co.	157
Sarsi, O. S.	146
Schaer Bros.	24
Schoenfeld Marble Co.	154
Scott Co.	138
Self Winding Clock Co.	156
Shreiber & Sons Co.	38
Sound Construction Co.	138
Southern Pacific Co.	164
Spencer Elevator Co.	13
Standard Varnish Works	147
Steiger Terra Cotta & Pottery Works	29
Stock, Lester H.	B
Sturgis, G. E.	18
Sunset Lumber Company.	157
Swan, Robert	146
Swedish Metal Co.	154
Taylor & Co.	138
Telephone Electric Equipment Co.	24
Thayer & Co.	143
Thermos Brick Co.	5
Toplight Shade Co.	4
Totten Planing Mill Co.	159
Trussed Concrete Steel Co.	35
Tuec Co.	32
Tibbetts-Oldfield Co.	161
Union Blind and Ladder Co.	46
United Materials Co.	20
U. S. Metal Products Co.	167
U. S. Steel Products Co.	155
Utility Gas Generator Co.	18
Van Emon Elevator Co.	1
Van Fleet, M. C.	150
Vonnegut Hardware Co.	23
Vulcan Iron Works	38
Wadsworth, Howland & Co.	31
Waters, R. J.	163
Weber, C. F. & Co.	150
West Coast Wire & Iron Works	162
West, M. G.	137
Western Brass Mf'g Co.	146
Western Building and Engineer-Company	165
Western Builders' Supply Co.	37
Western Iron Works	41
Western Pacific Co.	164
Western Sculptors	165
Western States Porcelain Co.	28
White Bros.	126
White Steel Sanitary Co.	11
Whitney Window Co.	29
Whittier-Coburn Co.	161
Williams Bros. & Henderson	157
Williams, H. S.	163
Wittman, Lyman & Co.	149
Wood Lumber Co.	130
Woods & Huddart	46
Zelinsky, D.	162

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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- Medusa White Portland Cement, sold by Building Material Co., Inc., Monadnock Bldg., San Francisco.

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- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See distributing Agents on page 32.)
- Biturine Co., of America, 24 California St., San Francisco.
- "Impervite" sold by E. A. Bullis & Co. (See advertisement on page 26.)
- Concrete Cement Coating, manufactured by the Muralo Company. (See full-page advertisement, color insert.)
- Concrewaltum. C. W. Coburn Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland, Agents.
- Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
- Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

CEMENT EXTERIOR FINISH
- Biturine Company of America, 24 California St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Glidden"s Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Dry Mortar Colors sold by E. A. Bullis & Co. (See advertisement, page 26.)
- Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.
- Concrete Cement Coating, manufactured by the Muralo Company. (See afull-page advertment, color insert.)
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- "Carbite" floor surfacing manufactured by E. A. Bullis & Co. (See advertisement, page 26.)

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- "Federal Steel Cement Hardener" manufactured by Federal Steel Cement Mills, Cleveland, represented by E. A. Bullis & Co. (See advertisement, page 26.)

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- "Federal Steel Cement Hardener" manufactured by Federal Steel Cement Mills, Cleveland, represented by E. A. Bullis & Co. (See advertisement, page 26.)

COLD STORAGE PLANTS
- Vulcan Iron Works, San Francisco.
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CLOCKS—TOWER
- Decker Electrical Construction Co., 111 New Montgomery St., San Francisco.

COMPOSITION FLOORING
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.
- Lithoid Products Co., Merchants Exchange Bldg., San Francisco.

COMPRESSED AIR CLEANERS
- The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.
- Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.
- Giant Stationary Suction Cleaner, San Francisco and Oakland.
- Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.
- Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
- McKibben & Taylor, 2125 Shattuck Ave., Berkeley.
- Otto, W. H., 269 Park Ave., San Jose.
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- P. A. Palmer, Monadnock Bldg., San Francisco.
- Petersen, H. L., 62 Post St., San Francisco.
- A. Lynch, 185 Stevenson St., San Francisco.
- Ransome Concrete Co., Oakland and Sacramento.
- International Concrete Construction Company, West Berkeley, Cal.

Specify... For Plastering

HOLMES DIAMOND SANTA CRUZ LIME

PHONE SUTTER 2202

Guaranteed Against Pitting or Popping

Holmes Lime & Cement Co.
600 Postal Telegraph Bldg., San Francisco

Telephone Sutter 4765

GASPARD & HAMMOND

BUILDING CONSTRUCTION

425 Sharon Building, 55 New Montgomery St. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE HARDENERS
"Federal Steel Concrete Hardener," mfd. by Federal Steel Cement Mills, Cleveland, Ohio, sold by E. A. Bullis & Co. (See ad., p. 26.)

CONCRETE MIXERS
Austin Improved Cube Mixer. Factory branch, temporary office, 1235 Pine St., San Francisco.
Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.
Smith Mixers, sold by Parrott & Co., San Francisco and Los Angeles.

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Clinton Welded Reinforcing System, L. A. Norris, 140 Townsend St., San Francisco.
"Kahn System," see advertisement on page 158, this issue.
International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
Triangle Mesh Fabric. Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.
Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
"Concreta" sold by W. P. Fuller & Co., San Francisco.
Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.
Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
Moller & Schumann, 1023 Mission St., San Francisco.

CONTRACTORS, GENERAL
American Concrete Co., Humboldt Bank Bldg., San Francisco.
Collman & Collman, 526 Sharon Bldg., San Francisco.
Foster, Vogt Co., Sharon Bldg., San Francisco.
M. Fisher, California-Pacific Bldg., San Francisco.
McLaren & Peterson, Sharon Bldg., San Francisco.
Howard S. Williams, Hearst Bldg., San Francisco.
Graham & Jensen, Maskey Bldg., San Francisco.
Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
Lester Stock, 12 Geary St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
John Monk, 2016 Vallejo St., San Francisco.
Ransome Concrete Co., 1218 Broadway, Oakland.
Williams Bros. & Henderson, Holbrook Bldg., San Francisco.
Burt T. Owsley, 311 Sharon Bldg., San Francisco.
Arthur W. Biggers, 112 Market St., San Francisco.
Sound Construction Co., Hearst Building, San Francisco.

CONTRACTORS, GENERAL—Continued.
Barrett & Hilp, Sharon Bldg., San Francisco.
Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.

CORK FLOORING
"Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

CORNER BAR
Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BEAD
United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
Grant Gravel Co., Flat Iron Bldg., San Francisco.
Niles Rock, sold by California Building Material Company, Pacific Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Biturine Co. of America, 24 California St., San Francisco.
Concrewaltum. Made by the Goheen Mfg. Co. C. W. Coburn & Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland, Agents.
Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco. and Tibbetts-Oldfield Co., Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
"Impervite," sold by E. A. Bullis & Co. (See adv. on page 26.)
Lithoid Product Co., Merchants Exchange Bldg., San Francisco.
Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS
McCabe Hanger Mfg. Co., New York, N. Y.
Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
Crane Company, San Francisco, Oakland, and Los Angeles.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

MORTENSON CONSTRUCTION CO.

CONTRACTORS FOR STRUCTURAL STEEL AND IRON

H. MORTENSON, PRES. CHAS. G. MORTENSON, VICE-PRES. AND MGR.

OFFICE AND SHOPS: CORNER 19TH AND INDIANA STREETS

PHONES: MISSION 5033—HOME M 3916 SAN FRANCISCO, CAL.

"FIBRESTONE"

SANITARY FLOORING, WAINSCOT AND BASE. Laid Exclusively by
FIBRESTONE & ROOFING CO., 971 Howard St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Central Electric Co., 185 Stevenson St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRICAL ENGINEERS
- Albert E. Noble, 173 Jessie St., San Francisco.
- Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC STEAM HEATERS
- Automatic Electric Heating Company, 2023 Market St., San Francisco.

ELECTRIC FIXTURES
- Roberts Manufacturing Company, 663 Mission St., San Francisco.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.
- San Francisco Elevator Co., 860 Folsom St., San Francisco.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- Van Emon Elevator Co., Natoma St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco

ENGINEERS
- F. J. Amweg, 700 Marston Bldg., San Francisco.
- W. W. Breite, Clunie Bldg., San Francisco.
- L. M. Hausmann, Sharon Bldg., San Francisco.
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.

EXPRESS CALL SYSTEM
- Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

FIRE EXIT DEVICES
- Von Duprin Self-Releasing Fire Exit Devices, Vonnegut Hardware Co. (See Adv. for Coast Agencies.)

FIRE ESCAPES
- Burnett Iron Works, Fresno, Cal.
- Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIRE BRICK
- Livermore Fire Brick Co., Livermore, Cal.

FIREPLACE DAMPER
- Head, Throat and Damper for open fireplaces, Colonial Fireplace Co., Chicago. (See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
- Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
- A. J. Forbes & Son, 1530 Filbert St., San Francisco.
- Fink & Schindler, 218 13th St., San Francisco.
- C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
- T. H. Meek Co., 1157 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- R. N. Nason & Co., 151 Potrero Ave., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- Moller & Schumann Co., 1022 Mission St., San Francisco.
- Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FLOORING—MAGNESITE
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

GARAGE EQUIPMENT
- Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

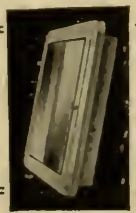
GAS AND ELECTRIC FIXTURES
- Roberts Manufacturing Company, San Francisco and Oakland.

GAS GENERATORS
- Utility Gas Generator Co., 340 Sansome St., San Francisco.

GLASS
- W. P. Fuller & Company, all principal Coast cities.
- Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRANITE
- California Granite Co., Sharon Bldg., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
- California Building Material Co., Pacific Bldg., San Francisco.
- Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.



"White-Steel" Medicine Cabinets and Mirrors are the last word in Sanitary Bathroom Equipment. See Sweet's 1914 Catalog, Pages 1054-1055 or write for full information.

"WHITE-STEEL" SANITARY FURNITURE CO.
Grand Rapids, Michigan

Northern California
Johnson-Locke Mercantile Co.
San Francisco, Calif.

Southern California
H. R. Boynton Company
Los Angeles, Calif.

CLARENCE E. MUSTO. Pres. JOSEPH B. KEENAN. Vice-Pres. GUIDO J. MUSTO. Sec'y & Treas.

JOSEPH MUSTO SONS-KEENAN CO.

Phone Franklin —6365— **MARBLE** OFFICE AND MILLS: 535-565 North Point St., SAN FRANCISCO, CAL.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND, CRUSHED ROCK—Continued
- Grant Gravel Co., Flatiron Bldg., San Francisco.
- Niles Sand, Rock & Gravel Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

GRAVITY CHUTES
- Gravity Spiral Chutes, sold by G. E. Sturgis' Supply House, 602 Mission St., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.
- American Keene Cement Co., 333 Monadnock Bldg., San Francisco.
- "Empire" Hardwall Plaster, Pacific Portland Cement Company, Pacific Bldg., San Francisco.

HARDWARE
- Russwin Hardware, Joost Bros., San Francisco.
- Pacific Hardware & Steel Company, San Francisco, Oakland, Berkeley, Los Angeles and San Diego.
- Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
- Western Brass Mfg. Co., 217 Tehama St., S. F.

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heaters, factory branch, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 710 Larkin St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRONING BOARDS
- Merritt Patent Ironing Board, sold by A. Hommel, agent, Atlanta Hotel, San Francisco.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIGHTING FIXTURES
- Roberts Manufacturing Co., 663 Mission St., San Francisco.

LIME
- Holmes Lime and Cement Co., Postal Telegraph Bldg., San Francisco.
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.
- E. K. Wood Lumber Company, East Oakland, California.

MILL WORK
- Totten Planing Mill Co., Stockton.
- Taylor & Co., 2001 Grand St., Alameda.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
- Schoenfeld Marble Company, San Francisco. (See advertisement, page 154.)
- Columbia Marble Co., 268 Market St., San Francisco.
- Joseph Musto Sons-Keenan Co., 535 North Point St., San Francisco.

MEDICINE CABINETS
- White Steel Sanitary Furniture Co., rep. by Johnson-Locke Mercantile Co., San Francisco.

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Monadnock Bldg., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

MORTAR COLORS
- Dry Mineral Dyes, sold by E. A. Bullis & Co. (See adv., page 26.)

HERE IT IS **MADE IN CALIFORNIA, TOO!**

A High Class Washable Paint for Inside Walls.

OPAQUE FLAT FINISH

Less material required to cover surface than any similar product on the market.

R. N. NASON & CO., 151-161 Potrero Avenue 54-56 Pine Street **SAN FRANCISCO**

MADE IN SAN FRANCISCO
PASSENGER and FREIGHT ELEVATORS
INVESTIGATE OUR PRODUCT
SPENCER ELEVATOR COMPANY
126-128 Beale Street, SAN FRANCISCO Phone Kearny 664

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
- American Heat & Power Co., Seventh and Cedar Sts., Oakland.
- S. T. Johnson Co. (see adv. below).
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.
- Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR BRIDGES
- Biturine Company of America, 24 California St., San Francisco.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- "Biturine," sold by Buturine Co. of America, 24 California St., San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Tibbetts-Oldfield Co., Los Angeles.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
- Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
- "Technola," a cement paint, sold by C. Roman, San Francisco.

PAINT FOR STEEL STRUCTURES
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Carbonizing Coating. Made by Goheen Mfg. Co., Canton, Ohio. C. W. Coburn & Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland, Agents.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

PAINTS, OILS, ETC.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
- Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
- W. P. Fuller & Co., all principal Coast cities.
- C. W. Coburn & Co., 320 Market St., San Francisco, and A. J. Capron, Ainsworth Bldg., Portland, representatives Goheen Mfg. Co., Canton, Ohio.

PAINT FOR STEEL STRUCTURES—Continued.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco and Tibbetts-Oldfield Co., Los Angeles.
- Moller & Schumann Co., 1022 Mission St., San Francisco.
- Paraffine Paint Co., 38-40 First St., San Francisco.
- R. N. Nason Co., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
- California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
- California Photo Engraving Co., 121 Second St., San Francisco.

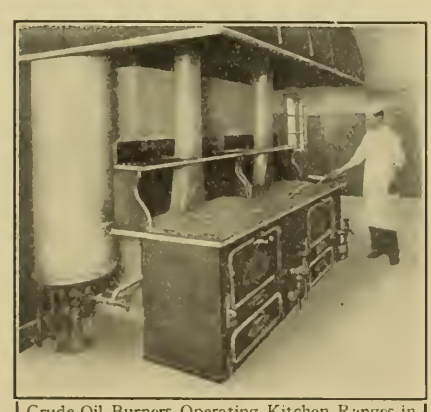
PHOTOGRAPHY
- R. J. Waters Co., 717 Market St., San Francisco.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, 985 Folsom St., San Francisco.

PLUMBERS' MARBLE HARDWARE
- Western Brass Mfg. Co., 217 Tehama St., S. F.

PLUMBING
- Boscus Bros., 975 Howard St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Peterson-James Co., 710 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco



Crude Oil Burners Operating Kitchen Ranges in Government Barracks at Fort Winfield Scott

OIL BURNERS
Modern EQUIPMENTS for Cooking and Heating Plants
S. T. JOHNSON CO.
1337 MISSION ST. SAN FRANCISCO
945 GRACE AVE. OAKLAND

Phone Lakeside 91

National Roofing Company

ROOFING AND COMPOSITION FLOORING

EVERYTHING IN ROOFING

PLAZA BUILDING, Fifteenth and Washington Streets, OAKLAND

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES, MATERIALS, ETC.
- Crane Co., Second and Brannan Sts., San Francisco.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PULLEYS, SHAFTING, GEARS, ETC.
- Meese & Gottfried Co., San Francisco, Seattle, Portland and Los Angeles.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

REVERSIBLE WINDOWS
- Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
- Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
- Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
- Pacific Building Materials Co., 523 Market St., San Francisco .
- C. F. Weber & Co., 365 Market St., San Francisco.
- Union Blind and Ladder Company, manufacturers of the Acme rolling partitions for churches and schools, 3535 Peralta St., Oakland.
- Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
- Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
- Biturine Co. of America, 24 California St., San Francisco.
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.
- National Roofing Company, Broadway, Oakland.
- "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
- Mackenzie Roof Co., 425 15th St., Oakland.
- United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
- American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
- M. G. West Co., 353 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.

SANITARY BATH FIXTURE
- "Boudoir" bath tub, mfrd. by Improved Sanitary Fixture Co., 411 S. Los Angeles St., Los Angeles. Sold by all plumbing houses.

SASH CORD
- Regal Sash Cord, Louisville Selling Co. represented on Pacific Coast by Baker & Hamilton.
- Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.

SCULPTORS
- Western Sculptors, 533-535 Turk St., San Francisco.

SEWAGE EJECTORS
- Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK, SKYLIGHTS, ETC.
- Berger Mfg. Co., 1120 Mission St., San Francisco.
- U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
- Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

STEEL AND IRON—STRUCTURAL
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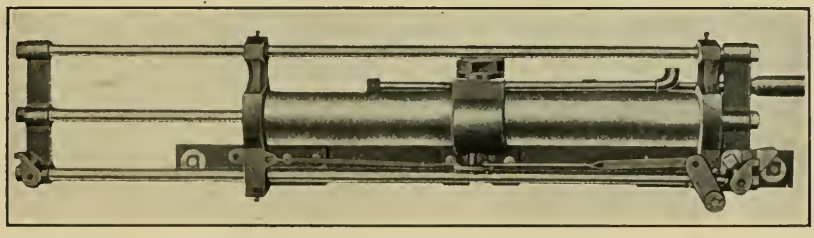

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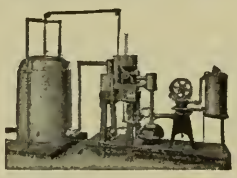

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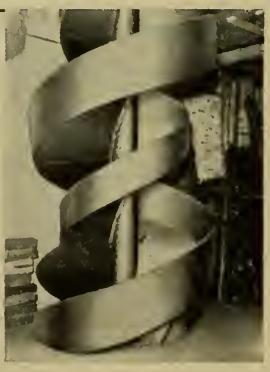

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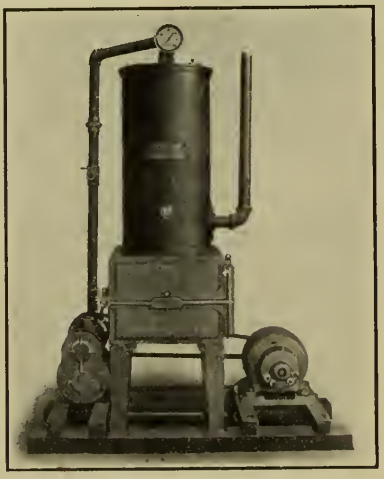

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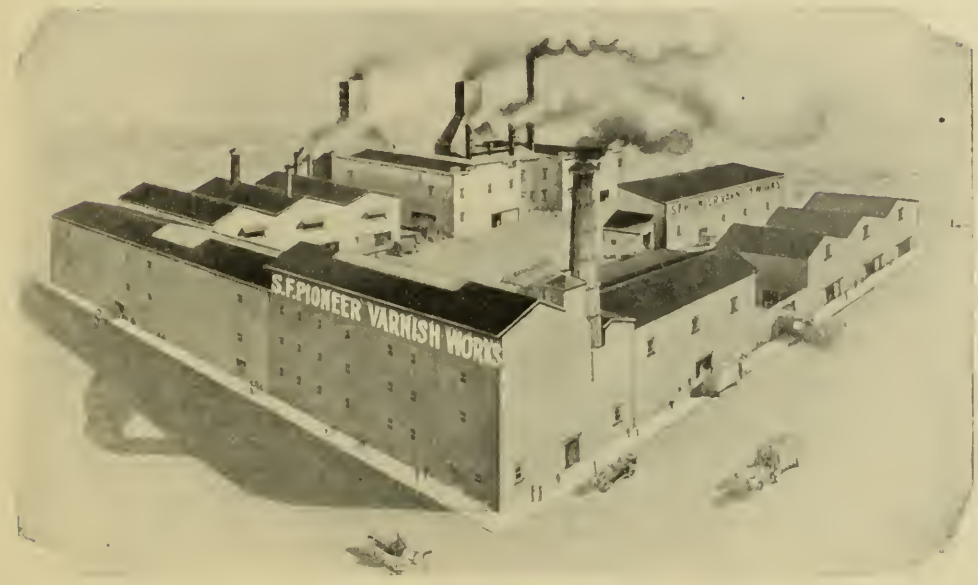

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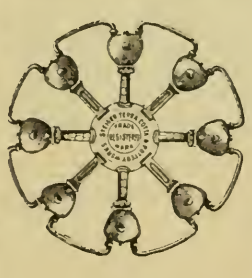

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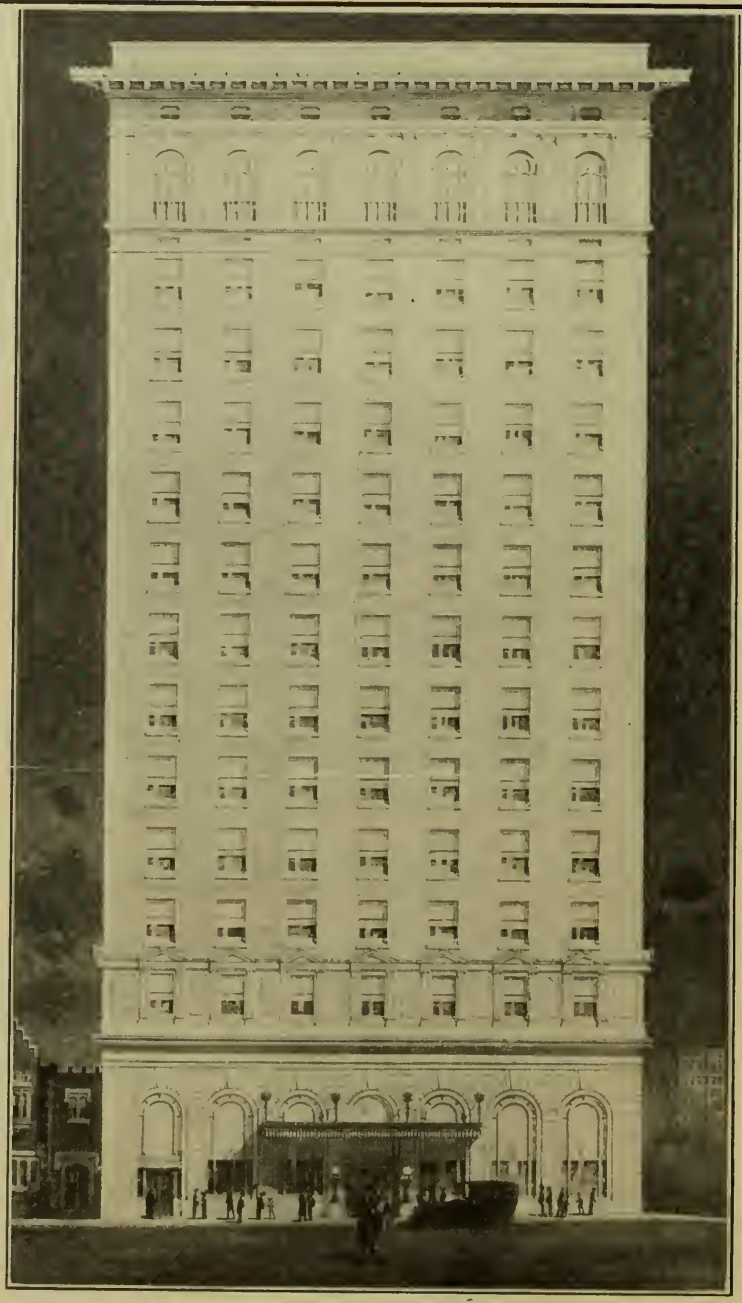

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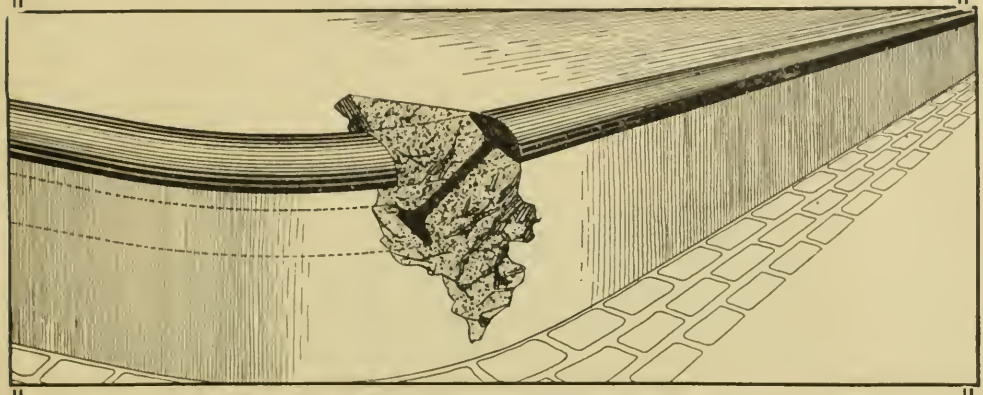

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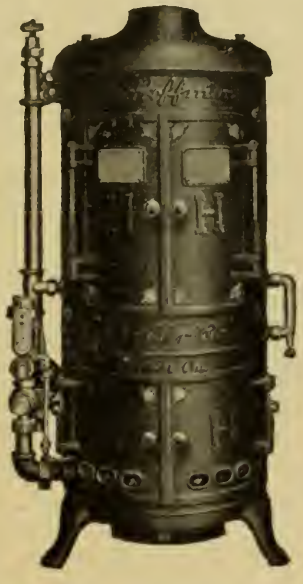

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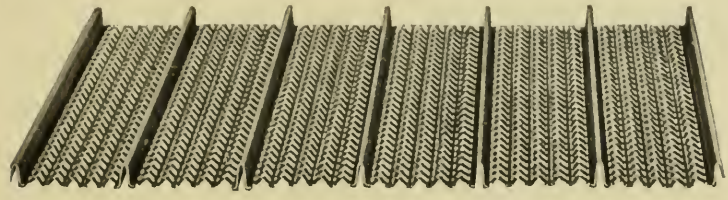

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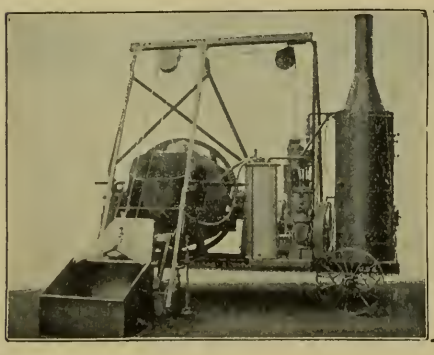

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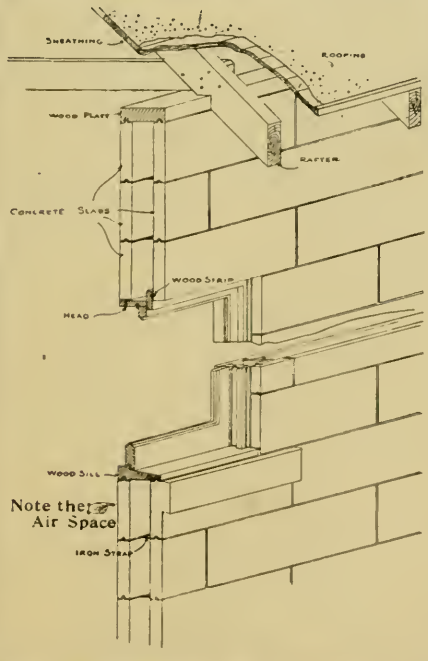

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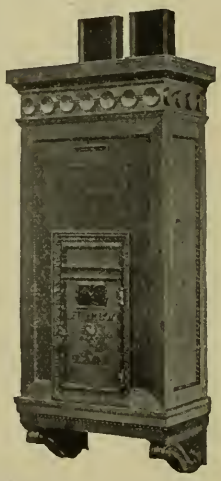

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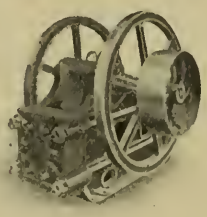

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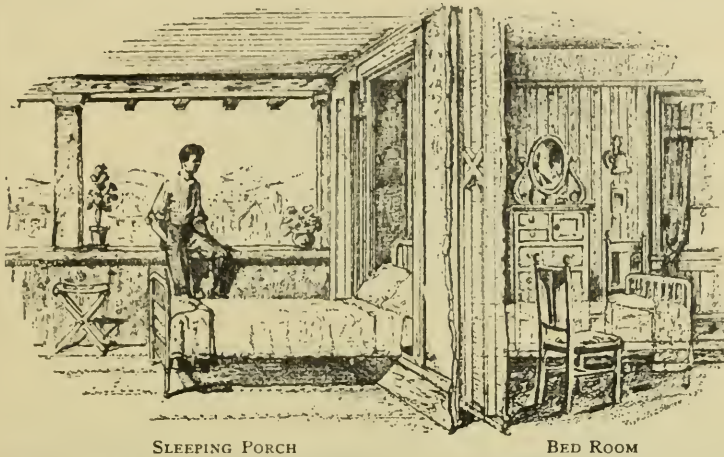

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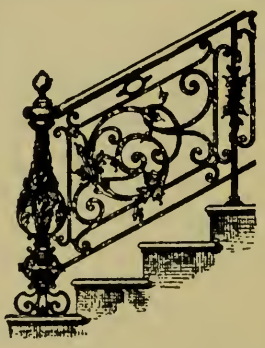

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Contents for December

PAGE

TOWER OF JEWELS (in four colors) - - - - - Frontispiece
Carerre & Hastings, Architects

THE PANAMA-PACIFIC EXPOSITION FROM AN ARCHITECT'S VIEWPOINT - - - - - - - - - - - 47
B. J. S. Cahill, A. I. A.

THE ARCHITECTURE OF THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION - - - - - - - - - - 61
Lowell Hardy

INTERNATIONAL EXPOSITIONS - - - - - - - - - 75
Louis C. Mullgardt

AN ARCHITECT'S IMPRESSIONS OF A WONDERFUL EXPOSITION - - - - - - - - - - - - - 77
W. Garden Mitchell, A. I. A.

THE ILLUMINATION OF THE EXPOSITION BUILDINGS - - 83
W. D'A. Ryan

THE STATE BUILDINGS AT THE EXPOSITION - - - - - 88

SOME NOTABLE ACHIEVEMENTS IN PLASTIC ART AT THE EXPOSITION - - - - - - - - - - - - 93

ARCHITECTURE - - - - - - - - - - - - 97
W. R. B. Willcox, F. A. I. A.

THE FEES OF ARCHITECTS - - - - - - - - - - 102

"PRACTICE AS AMERICAN INSTITUTE ARCHITECT" - - 104

SOME NOTES ON CLAYS AND TILES - - - - - - - 105
J. Clark

SOME HAND-CARVED FIREPLACES - - - - - - - 108

EDITORIAL - - - - - - - - - - - - - 112

AMONG THE ARCHITECTS - - - - - - - - - - 114

[Index to Advertisements Page 8]

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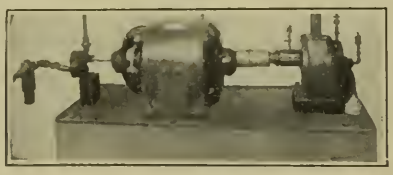

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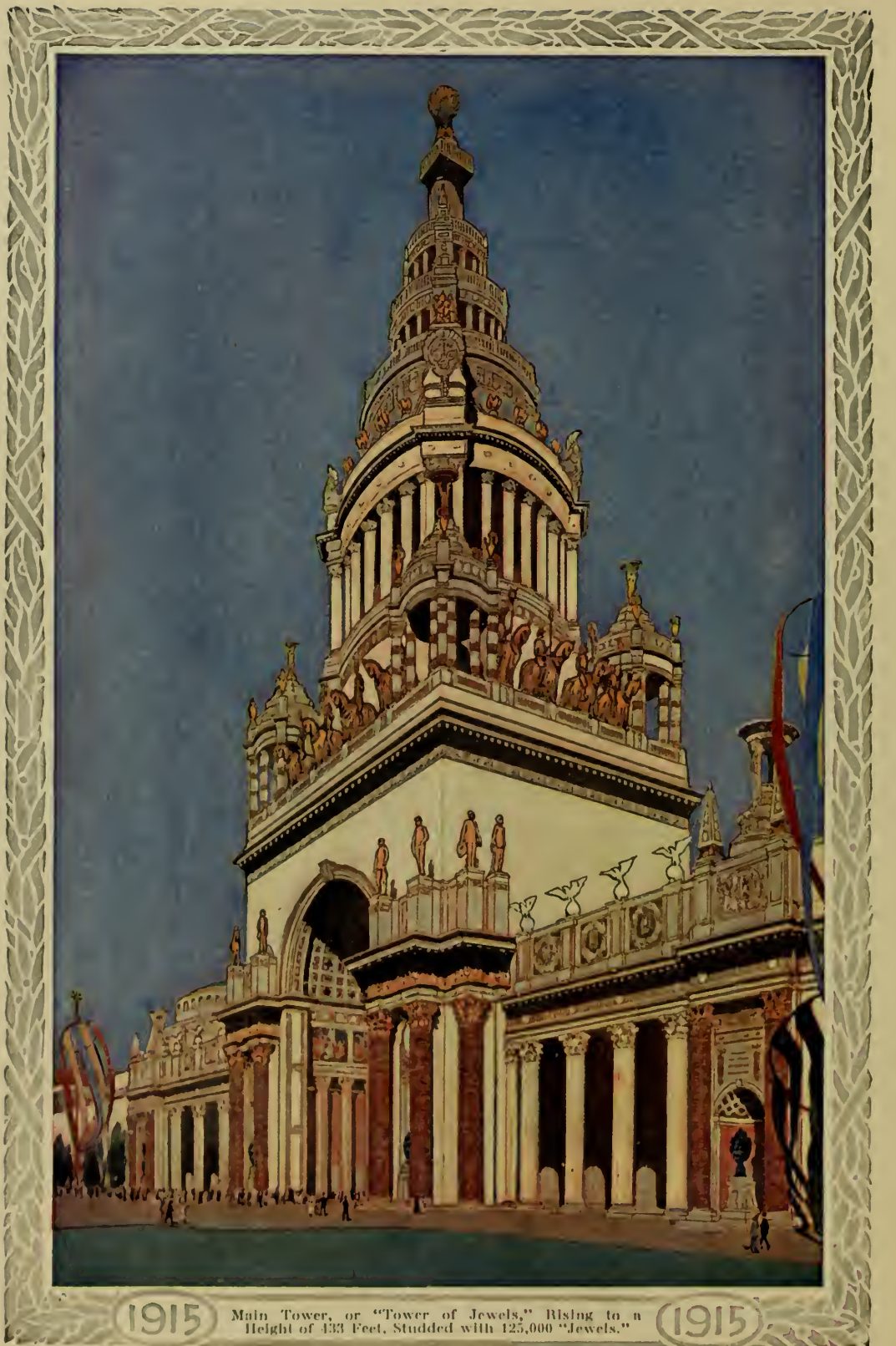

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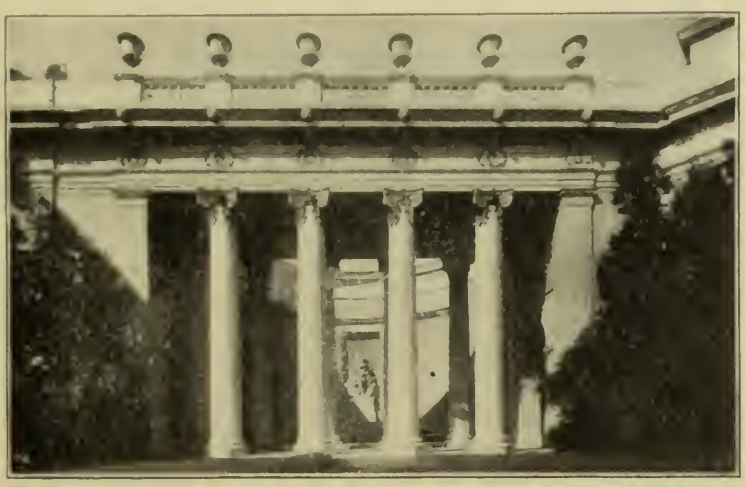

COLONNADE COURT OF FOUR SEASONS
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The Panama-Pacific Exposition from an Architect's Viewpoint

By B. J. S. CAHILL, A. I. A., F. R. G. S.

THERE are good reasons why an architect is the very last person in the world to describe a great symphony of architecture such as the Panama-Pacific Exposition. He is much too likely to see orders, mouldings and details where he should really see only colonnades, colors and effects. His knowledge of detail and the processes of construction is apt to dull his sensibilities to the bewilderment and confusion that is so fascinating to the layman. And before going any further, we might dwell a moment on this very question of the enjoyment of any great complex work of art.

Only those who do not know too much and who can surrender wholly to their senses, can really get the thrill and rhapsody of a mighty pageant. Those who are young will enjoy the Fair far more than those who are old. Possibly this accounts for the fact that the nations when they were younger, succeeded so much better than we do in ravishing the minds of the masses by the terrific architecture of their tombs and temples. No doubt the first

triumphs of architecture in evoking the emotions were obtained by inspiring awe, which in reality is nothing but the glorification of fear. If we can reduce our feelings to those of a child or a savage, we can easily realize how a very high wall, like a very high cliff, will induce a sort of dread. It is impossible to go close to a precipice of rock, such as can be passed on the trail to the Upper Yosemite Falls, and look up to the towering mass above, without the feeling of fear. It is probably explained by scientists as a racial reminiscence of the danger from falling fragments. Then again a great cave will overwhelm the senses and cause one to speak in whispers, just as a mighty dome or vault will do. No one can quite escape these primitive feelings, and the reason is that they are based on deep-rooted and age-long inherited racial recollections. But the nearer we are to the child and the savage and the less our feelings have been drilled out of us by learning, the quicker we shall respond to the primitive appeal of "fear" in architecture, which is the basis of the "sublime." And next to what is huge and overwhelming in heroic architecture usually developed in exposition work, comes the use and joy in color. The full delight in color is reserved also for children and semi-savages. We grow wise and gray by the same process. The grayness of modern life is a sign of our weariness and sophistication. Time will fade out anything. Youth and newness, freshness and folly even, all are full colored and vivid. And here again the appeal of the Exposition considered as an architectural spectacle is, primarily, to those who are young and looking out onto life with hope: keen in enjoyment rather than apt at analysis. In other words, the Panama-Pacific Exposition proper is frankly a feast, a revel even in all that is gorgeous and intoxicating in architecture, sculpture, painting, gardening and illumination. And the main appeal is made to those with keen appetites and relish for all the good things that can be fed to mortal vision, rather than to those who could explain and analyze them. It will therefore be my function to mix an appetiser rather than to expound the menu or reveal the secrets of the chef's receipts.

Let no one imagine from the tenor of the above remarks that this great symposium of art and architecture appeals to youth because it is in the least bit crude, or that it appeals to primitive tastes because it is in itself the least bit primitive. No one could make a more misleading mistake. The whole gorgeous pageant, the entire complex "scene," is the very last word in all that is sophisticated and down to the hour. All the effects, no matter how barbaric or spontaneous in appearance, have been worked out with deliberate and cold-blooded science by a group of experts as highly trained for the feat as any to be found on the continent.

When this great exposition was actually determined upon, I was in the city of Portland, far removed from all discussion and local speculation. Without claiming any prophetic faculty, but to show that the final realization expresses an ideal common to a great many of us, I will repeat what a friend and myself said in discussing the news at the time, long before even the site had been finally settled upon.

After some discussion we determined three things. We said, this Fair must be at North Beach, because as it celebrates a water triumph it must be not only near the water but part of the water. It must not only flank the bay, but the bay must be let into and must flow around the Exposition. This could be done at Lake Merced or near the Park, but these sites are not near enough to the town. Next we decided that, on account of the well-known winds it should be built on the bazaar plan, a series of connected interior courts, each a different type of oriental architecture and each with

stone rimmed pools of water to reflect the glory of the walls around. Finally we concluded that the Exposition architecture should differ from all attempts heretofore, inasmuch as it should be one riot of color from top to bottom. In the main these leading ideas have been realized with rather less of water and much less of India, Egypt and Ceylon that we anticipated.

And after all there has been deep wisdom in this. We are all prone to make false analogies. We say, for instance, what the Atlantic has done for the eastern coast, the Pacific will do for the western. We entirely overlook the fact that water can divide as well as unite. The Atlantic is a good highway between Europe and America, but the Pacific is a barrier between America and Asia. And just as day and night meet in mid-Pacific by universal consent, so do the light and the dark races of the Occident and Orient line up against each other here in permanent and unblending demarkation. The west coast of America is, in a sense, the last boundary of the white race and it is not to Asia that we turn for inspiration in the arts, but back to Europe where we came from. California is not only the same latitude as Southern Europe, but it is destined to be settled up through the Panama Canal by immigration from the Mediterranean. And, in a sense, San Francisco bay is a miniature epitome of the Mediterranean. The architecture of the Exposition expresses this perfectly. For it is inspired almost wholly by the ancient forms developed in classic Greece and Rome; in Spain and Italy of the Renaissance, and in France of our own epoch. Added to these are some motives reminiscent of the Gothic of Rouen and the Byzantine of Ravenna, and over all a hint that the domes of this new City by the Golden Gate are kin to the domes of the old city by the Golden Horn.

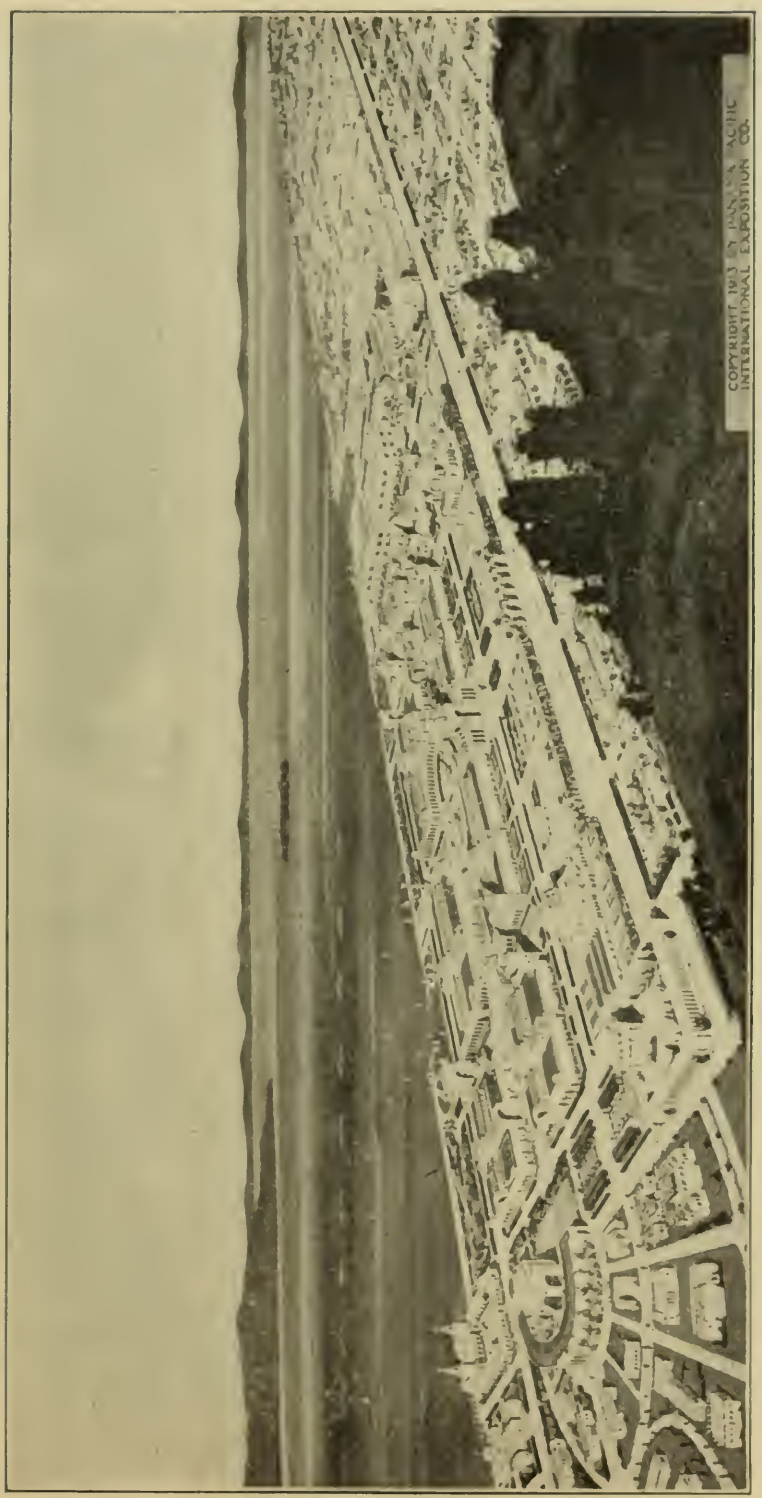
On low flat land, then, by the water's troubled edge, lies this, the latest sea-born city of a dream, and like a dream ephemeral and fleeting. Its colored domes are clustered thick like bubbles of ocean foam blown up from the storm-tossed breakers of the beach. Its color, seen from afar or from on high, is also the color of coagulate sea-foam, as though its walls were modelled in new meerschaum or cut from old ivory. Its roofs are fretted like shells and colored like coral wet with brine. Its portals are stained as copper keels salted with long voyages. Its domes are of many colors. Some are of cold orange, like fresh kelp; others gleam like winter sunset. Others again are the green of breaking waves and others are of every shade of jade.

But we must descend from this far-away vision which greets the senses from the hilltops like a strain of distant music, and view the golden city at closer range and in the light of the noonday sun.

As the basic or "holding" color of the whole Exposition is founded on a full gamut of orange from the coldest tones of cork to the fullest glow of gold, it is really best to see the buildings after rain, when the sky is washed to the purest cobalt. Then if we walk down through the central avenue of the main buildings from west to east, providing it be afternoon and the sun is shining, we shall face, one after another, a series of resplendent tone pictures the like of which has never before been decreed or created by any community on earth.

The architectural part of the whole Exposition is, like ancient Gaul, and everything else for that matter, divided into three parts. If we imagine that we are stationed inland and looking northward across the bay at about the center of the entire grounds, the main Exposition group will lie in a long rectangle across the middle of the line of vision, its long axis running east and west. This is the main organic nucleus of the Exposition. Its body is a huge rectangle 3000 feet long and 1000 feet across. This is divided into eight exhibit palaces by four broad open courts cutting it once through its

BLOCK PLAN OF PANAMA-PACIFIC EXPOSITION, SAN FRANCISCO



AEROPLANE VIEW OF PANAMA PACIFIC EXPOSITION GROUNDS

John Monk, Builder.

PALACE OF HORTICULTURE, PANAMA-PACIFIC EXPOSITION
BAKEWELL & BROWN, ARCHITECTS

LIBERAL ARTS BUILDING, PANAMA PACIFIC EXPOSITION
BLISS & FAVILLE,
ARCHITECTS

Lange & Bergstrom, Builders

PALACE OF EDUCATION AND [illegible]

PALACE OF VARIED INDUSTRIES
W. B. FAVILLE, ARCHITECT

PALACE OF EDUCATION
W. B. FAVILLE, ARCHITECT

PALACE OF MACHINERY
WARD & BLOHME, ARCHITECTS

long dimension and three times through its short dimension. At the head of this rectangular group to the left or west is the Fine Arts Palace and at the foot, to the east, is the Machinery Hall. To the south of this main rectangle and flanking the main entrance leading to the Tower of Jewels (the tallest building of all), is the Horticultural Palace and the Festival Hall. This, with the addition of an Automobile Exhibit south of the Machinery Hall, constitutes the principal part and the only part that can be considered with its gardens and waterways as one homogeneous group.

It is this group that summarizes so completely the architecture of the peoples dwelling on the Mediterranean, not at any one epoch, nor in any one spot, but rather, as it were, the culminating spirit of their greatest efforts. Nor has this been done in the slavish spirit of the archaeologist. In this the designers have again shown consummate wisdom. I have seen two of the great French Expositions, and I recall that while they showed amazing originality, they did not for that very reason make instant appeal. No wise concertmeister will make his whole programme of new music by new composers. At a gala celebration above all, a wise impressario will be careful to feed the people with something familiar. No new, original work of art can ever hope to win wholesale and popular success. Much more than in Europe, already stocked and overflowing with classic masterpieces, do we here, on the edge of the white man's world, need to see realized and visualized some of the spirit of the masterpieces of old. It's a long, long way to the Acropolis, and what we need here is something of the godlike simplicity of the Athens of Pericles before our eyes, and something of the monumental and massive dignity of Imperial Rome. What is paltry, like what is poor, we have always with us. We need, therefore, on this exalted occasion of the Exposition, something of the Gothic splendor of the age of tourneys and mediaeval pageants, something of the grace and elegance of the Renaissance in Italy, something of the richness and romance of the Renaissance in Spain. It will do us good, too, to marvel awhile at Byzantine polychromes and African arabesques. Nor should we overlook the art output of our own age, the plastic exuberance of the French, and last, but not least, our own American ingenuity in the latest art of illusional illumination. And all these things, the cream of all creative art of all the ages we have here assembled and blended in one superlative symposium, and not as slavish reproductions, but rather as spiritual reincarnations. So that we have here in the richest vestiture of form and color and in the noblest setting of land and water, the very spirit and soul of the old world Genius of Architecture to abide amongst us for a while as a wondrous vision and memory of what has gone before, and as an abiding inspiration for what is yet to come.

The second part of the Exposition lies to the left or west of this, the central group. It is a more or less heterogeneous assemblage of buildings for the various states of the Union and foreign countries.

The third part of the Exposition, lying to the east or right of the central body, is devoted to amusements, to fun, frolic and buffoonery, also as much a part of an exposition as its high art and its not quite so high commercialism. In fact, this section pays for much of the high-toned glory of the rest and should not be despised. It will most likely attract and hold a great majority of visitors who are only partly interested in what may be called legitimate exhibits, much of which to the average man comes up to that dreary wandering "among miles of pickles," which is the impression of the inside of some expositions we recall.

I have suggested how a casual visitor, on the right kind of a sunny afternoon, might get the maximum of thrills from the glorious facades of the

inner courts and arcades of the main group. I think it would be possible to very much intensify the vividness and stimulation of our pilgrim's progress from west to east as prescribed, if he would first of all make a hasty tour of the second part of the Exposition, particularly among the various State Buildings. In the ritual of every religion a feast is invariably preceded by a fast. To properly appreciate the soft air and the rose-grown charm of a California winter one should come from the biting blizzards and sleeting chills of a Christmas in Massachusetts or the Middle West. There is no intention here whatever of belittling the architecture of the State buildings. They represent the typical normal aspirations of the various states with fair precision, and it is rather to exalt the creators of the Exposition group than to decry the designers of the states group that a contrast is here suggested.

The designs of the Exposition Palaces and Courts are carried to such a high pitch of intensive excellence, the detail is so rich and the finish is so florid that when once the eye is keyed up to this lavish standard, it is almost impossible to realize for long what amazing riches of form and color are actually surrounding us. Visions of delight crowd on us so thickly that the optic nerves refuse to rightly respond. At any rate, we grow so accustomed to this revel of form and color that we lose consciousness of its extraordinary opulence. One does not realize this at first. It is only when one gets among the plain State Buildings that one realizes the contrast. And it is as startling as when one turns from the amber glow of sunset to the cold grey world of an hour after.

I have often wondered what there was to boast about in the buildings of Bullfinch, or for that matter of any of the early architects of New England. Severe, plain, uninteresting, bald, cold, drab and dismal they have ever seemed to me. Nothing in all the history of architecture was ever so dull and deadly as a Puritan meeting house, unless we except the people who made them and prayed in them. Of course any narrow cult that excludes much will grow deep and strong in what it retains. But for the normal balanced man no such half culture is salutary. But if Puritanism gave us a starved and frigid architecture, it was at least consistent and not devoid of character by which you could at least recognize it and keep away!

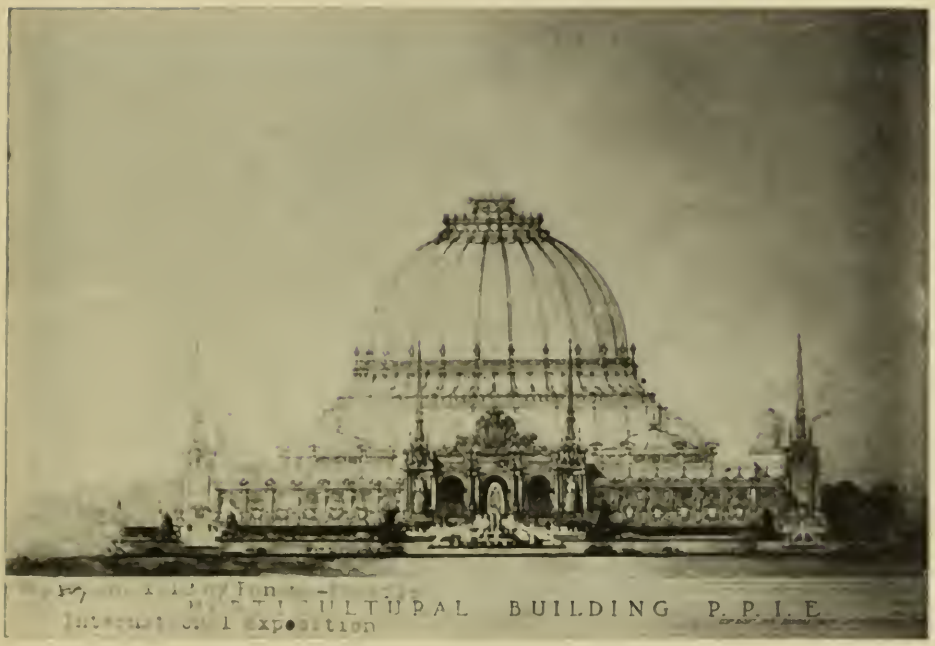
But there is another cold and dreary architecture—that of a New Community, especially a new Anglo-Saxon community. Let us be frank about it and admit it. The Puritans had a rough sincerity. They refrained deliberately from expressing any joy in their buildings. They had their burning enthusiasms and made great sacrifices, but NOT in the cause of art. But the good people of a later day, those who swarmed over this huge continent and made its trails, felled its forests and built its cities, their main enthusiasm and sacrifice was in the making of money and that with so much haste that art again was served as horribly as the Puritans served it; only that the former wouldn't and the latter couldn't. But however hard they tried, every court house and city hall over some two million square miles of cultivated civilization attests how a great community can be heroes in agriculture and hoboes in architecture.

The commonplace architecture of the Middle West, though very flatteringly represented at the Fair, can be appreciated by reversing the experiment recommended above. Let any one merely pass through the main exhibition and then visit the States buildings and he will feel how tame and tiresome is the architecture we produce on ordinary occasions compared with the architecture we are capable of producing on extraordinary ones!

ANOTHER VIEW OF THE PALACE OF HORTICULTURE
Bakewell & Brown, Architects

And perhaps this will be the lesson of the exposition. Not that every building must be a palace nor every day Sunday, but that we can lift up the plane of our daily work to much loftier standards than those that now obtain.

And perhaps another view leads to the thought that as the Exposition summarizes and brings to a focus the art of Europe on the Mediterranean, we might look for the latinising of our art. Here, on similar latitudes facing the Pacific, we may conceive that a more genial climate will nourish a more generous architecture—something that would be represented by olives and oranges, grapes and pomegranates in place of the outdoor art we associate with apples and oats, hops and potatoes.



ARCHITECTS' PRELIMINARY DRAWING OF THE PALACE OF HORTICULTURE
Bakewell & Brown, Architects

The Architecture of the Panama-Pacific International Exposition

By LOWELL HARDY.

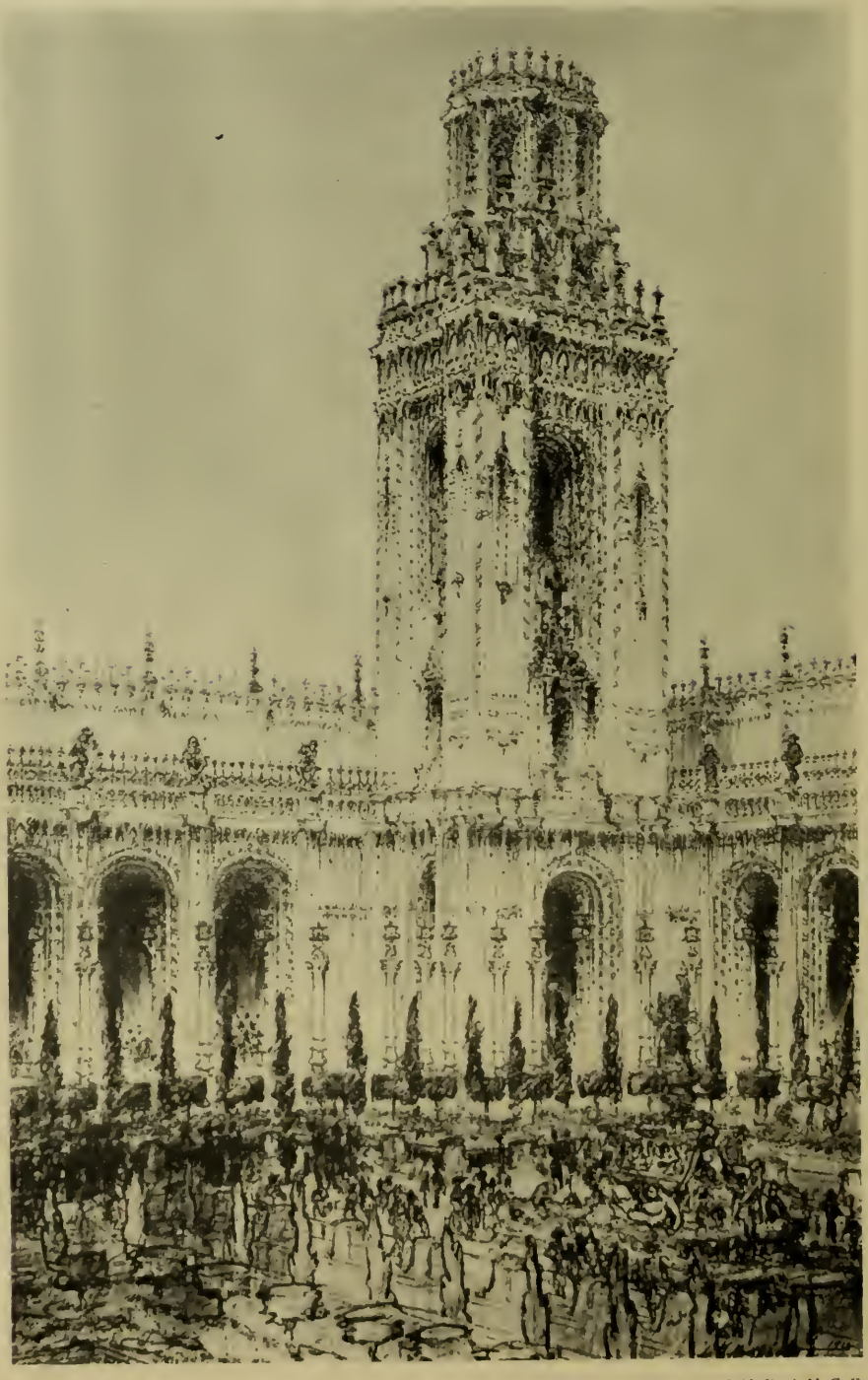
ON February 20, 1915, on time and finished to the last minute detail, the $50,000,000 Panama-Pacific International Exposition, the greatest of all world expositions, will open at San Francisco.

A consideration of the widely-known "block plan", that has been here worked out with such marked success, is of interest at this time.

This plan as applied to the construction of the eight central exhibit palaces is unquestionably a happy solution of the exposition problem in that the distances to be traveled are reduced to a minimum. In all previous expositions the most wearisome feature has been the long walks between the various buildings, while at the same time the lack of any regular plan of location for the different exhibit palaces has proven confusing to visitors.

The main group of buildings at the Panama-Pacific International Exposition may be briefly described as being set within a great garden, with its own area broken up to afford the interior courts, which in themselves have been made features of great beauty. A profusion of flowers and notable works of sculpture surround pools of water in which are reflected the gardens and the architectural beauties of the palaces, while the walls are hung with mural paintings, the work of the greatest of living artists. Splendid fountains are to be found in every court.

In the building of the exposition the attempt has been made to not only provide a fitting setting for the great world celebration of the com-



COURT OF ABUNDANCE
LOUIS C. MULLGARDT, ARCHITECT

pletion of the Panama Canal, but also to foster progress toward better architectural standards. To this end some of the ablest men in the professions of art and architecture were brought together.

The architecture of the exposition is not of a rigid type but on the contrary the style is flexible, all sameness and monotony being avoided. A satisfactory relation has, however, been brought about between adjacent and attached structures by means of a unique plan of designing. The architects of the various buildings were not commissioned to prepare complete plans for the structures. Instead, the buildings proper were designed by the engineers, the architects' function being to design the walls and courts. Another way of expressing this idea is to state that the entire exterior wall of the main group was put into the hands of one architect, while the facade of a separate court was designed by different architects. It will thus be seen that a court is adjacent to two or four buildings. Each entire court has been considered a decorative feature in itself, and is in all cases the result of one designer's effort, producing thereby a perfect unit. Where the work of the designer adjoins that of another, a transition has been accomplished by an intermediate architectural treatment.

Outside of the main group the buildings are cared for in the usual manner, each structure being handled by one architect. The principal buildings being the Palace of Horticulture, the Palace of Fine Arts, the Palace of Machinery, Festival Hall and the California Building.

The main group comprises the following eight exhibit palaces: Education and Social Economy, Food Products, Agriculture, Liberal Arts, Manufactures, Transportation, Mines and Metallurgy and Varied Industries. As an integral part of its design the Tower of Jewels and the Court of the Universe, the Court of the Four Seasons, the Court of Flowers, the Court of Abundance and the Court of Palms.

The three interior courts with their extension are developed longitudinally north and south, affording the greatest protection to visitors on warm or windy days. They are interconnected east and west and open to the esplanade on the north while the two smaller or south courts open into the South Gardens.

The Court of the Universe, the central court, is approximately 500 feet by 900 feet, resembling in size and shape the great plaza approaching the Church of St. Peter at Rome. On the east and west axes of the curved colonnades are Triumphal Arches, 150 feet long to base of sculpture, being larger than the Arc de Triomphe at Paris. Above these arches masses of sculpture rise forty-one feet higher.

The east arch, the Arch of the Rising Sun, leads to the Court of Abundance, and is surmounted by a group of statuary symbolizing the Orient. The western arch, which forms the entrance to the Court of the Four Seasons, is of equal size and is surmounted by sculpture representing the Nations of the West. This arch is called the Arch of the Setting Sun. These two immense arches exemplify the theme of the exposition, the meeting of the East and West in the completion of the Panama Canal.

On the south the Court of the Universe is dominated by the 435 foot Tower of Jewels, which accents the central entrance to the main group of eight exhibit palaces. The tower terminates in a globe. The structure is a pyramidical mass, richly sculptured, rising from a base 125 feet square through which passes a vaulted opening 60 feet in width and 110 feet high, with an interior vault 72-6 by 116-6.

The Court of the Four Seasons is 340 feet square and is open on the north to San Francisco bay by way of a colonnaded avenue 473 feet long

VIEW OF TOWER FROM ARCHITECT'S DRAWING
Louis C. Mullgardt, Architect

and 171 feet in width. Through a passage in a great niche or half dome it opens into the Court of Palms. In each of the four corners of the court, behind a screen of columns, is a niche containing a fountain and statuary symbolic of the four seasons. Behind these columns are hung mural paintings carrying the same theme.

The east court, the Court of Abundance, is symetrical and similar in size to the Court of the Four Seasons. The two south courts, the Court of Palms and the Court of Flowers, are extensions of the Court of the Four Seasons and the Court of Abundance. They are rendered in the Italian Renaissance.

The main group of palaces is 2756 feet long and 1250 feet in width. The principal features of the plan of the group, in addition to the courts and

the Tower of Jewels, are the longitudinal and transverse aisles and clerestories in each palace of the group. A dome is the central and dominant factor and is located at the intersection of the longitudinal and transverse aisles. The aisles in both directions have arched trusses which terminate at the dome and there has been added to the structure under the dome, certain framing to form false pendentives which appear to give it support.

The north and south outside walls of the main group might be said to be a liberal treatment of the "Plateresque" (Spanish architecture of the early Renaissance period, so called because of its likeness to the work of the silversmith) with the east and west walls after the Italian Renaissance, the latter harmonizing with the Palace of Machinery and of Fine Arts and serving also as a transition to the plateresque. The ornament and enrichment of the north and south walls is chiefly concentrated about the doors, windows and entrances. The parapet of the main wall is crowned with Spanish tiles.

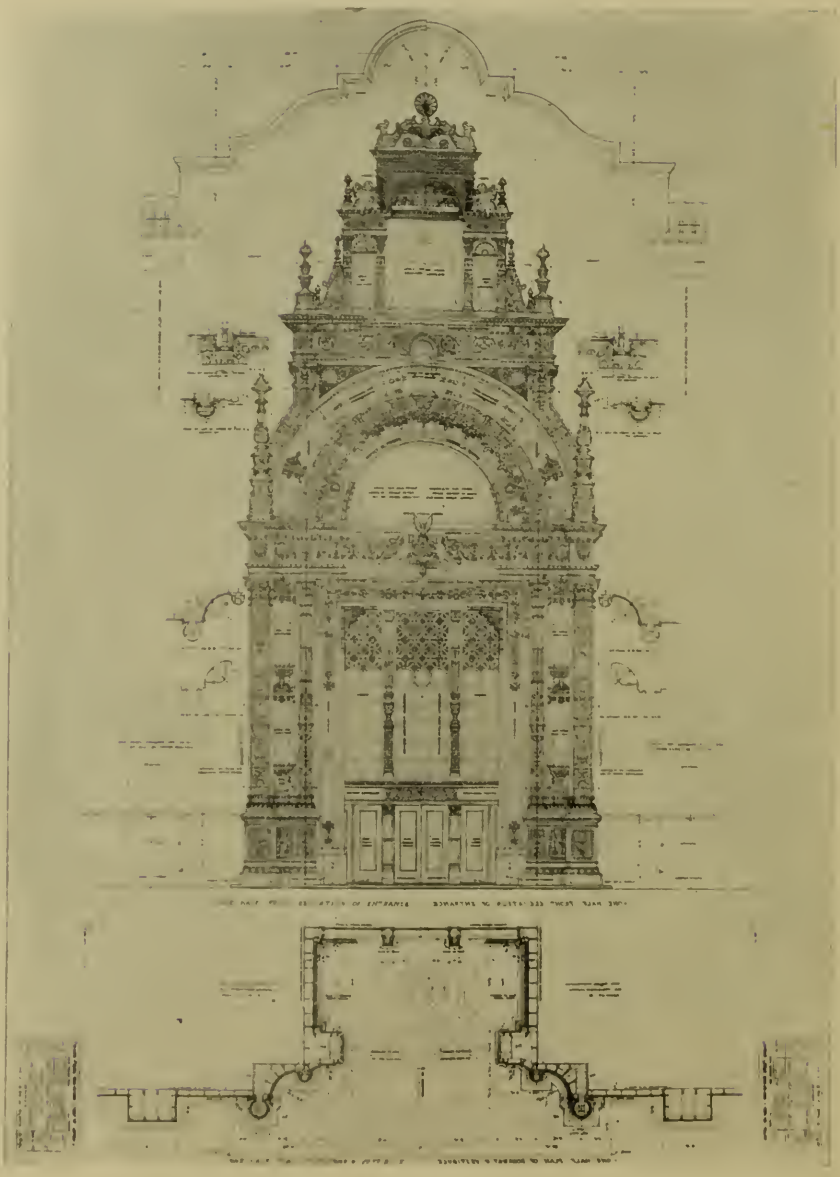
In general the architecture of the main group is characterized by such features as the above mentioned. It has already shown itself to be a style of architecture extremely well adapted to exposition work and it is especially suitable for the climate of California.

Of the detached structures of the exposition, the Palace of Machinery first commands the attention of the visitor. In architectural composition this palace is Roman, the designer being influenced by his study of the Old Roman baths and thermae. The decoration is classic in form but modern in expression, and is suggestive of machinery and invention. The principal feature of the structure is the three arched aisles, 75 feet wide and 101 feet high, throughout its entire length of 968 feet. On each side of the main structure there are side aisles 70 feet wide covered with shed roofs 41 feet high. The total width of the building is 368 feet. There are three transverse aisles of the same width as the longitudinal aisles and 132 feet high, which form the central and dominant feature of the building. The interior of the frame is recalled on the exterior of the building by large arched openings on the ends.

The Palace of Fine Arts occupies a commanding position 400 feet distant from the west wall of the main group. Immediately in front of the building is a pool of still water in which is reflected the building and its surrounding gardens. This palace is curved in plan with its east and west elevations forming parallel arcs. On the east facade the decorative feature is a colonnade the north and south terminations of which are the main entrances to the building. A domed, circular rotunda is enclosed within the arms of the colonnade and becomes the dominant note of the composition.

The architecture is early Roman with marked traces of the finer Greek influences. Pompeiian and Italian forms occur harmoniously, especially in the garden details. The architect has given an expression of quiet to the building by means of the pool and the sculptural notes selected.

The Palace of Horticulture, declared by many to be the most beautiful exposition structure ever built, is Saracenic in composition, and in relation to its domes and minarettes is similar to the Mosque of Ahmed I. The details and ornament, however, have a 16th Century French Renaissance feeling. The wooden trellis work forming a distinctive feature in the decorative scheme, is derived from the garden architecture of the Louis IV period in France, which with the large area of glass, suggests the purpose for which the structure was intended. The dome of the Palace of Horticulture is the largest hemispherical glass dome now in existence. It is 152 feet in diameter or approximately the same as the Pantheon at Rome, and 185 feet high.



FRONT ELEVATION, VARIED INDUSTRIES BUILDING
Bliss & Faville, Architects

Festival Hall was studied from the Theatre des Beaux Arts type of French Architecture, because of the exposition style and character of this structure. The plan adopted has the usual theatre arrangement of a foyer in front, and the stage with its accessories, behind a circular auditorium, is unusually successful in its festive qualities. The details are studied from the French Renaissance ornament, particularly from Le Petit and Le Grand Trianon. The building is 386 feet long and 376 feet wide at the central part. The dome, which forms the dominant feature of the design, is 221 feet high and 172 feet in diameter on the outside.

DETAIL OVER DOORWAY, TRANSPORTATION BUILDING
Bliss & Faville, Architects

PHOTOGRAPH OF THE SAME DETAIL AFTER COMPLETION OF BUILDING
Bliss & Faville, Architects

EXPOSITION AUDITORIUM, SAN FRANCISCO CIVIC CENTER
Designed by Messrs. Howard, Meyer & Reid, Consulting Board of Architects

The California Building is a low, irregularly-shaped structure, about 560 feet long and 420 feet wide, built around an open court 200 feet square. The court faces the south side by a low arcade accented at either end with gateways. The architecture is distinctively California Mission adapted to meet modern requirements. At the north of the court is the main entrance to the building with arcaded entrances on either side leading into the California exhibit space on the east, and on the west to the great ball room with its subsidiary foyer and reception rooms.

The display space covers an area of about 80,000 square feet with an additional area of about 20,000 square feet in a mezzanine above. The ball room is 55 by 130 feet, on the inside. At the west of the court is a two storied wing in which are housed the executive offices of the Federal and State Commission and of the Exposition.

The Exposition Auditorium, costing $1,300,000 and capable of seating 10,000 persons in the main hall, was erected at the Civic Center. It is 275 feet wide and 412 feet long covering an area of 113,438 square feet. The architectural treatment of the building suggests the French Renaissance and is designed to conform with the City Hall, now in the course of construction and with other buildings of the Civic Center. The above picture of the Auditorium is the first to be published, showing the structure as it appears today. The photograph was taken December 1st and shows a portion of the cornice still uncompleted.

The main group of exhibit palaces of the exposition occupy about 43 acres. To the east lies the concession district and to the west the State and Foreign Sites, where the forty foreign nations and forty-three states that are participating in the exposition have erected their pavilions. Beyond is the Live Stock Department, race track and athletic field.

The exposition grounds reach from Fort Mason on the east to the United States Presidio Military Reservation on the west extending along the shore of San Francisco bay for a distance of about two miles, just within the Golden Gate. Across the water the Marin Hills rise abruptly from the strait and towering over all in the background is Mount Tamalpais. It is probable that no previous world exposition was ever so favored with a site that included to so great a degree the qualities of scenic beauty, adaptability and convenience.

NORTHERN ENTRANCE, COURT OF THE UNIVERSE
McKIM, MEAD & WHITE, ARCHITECTS

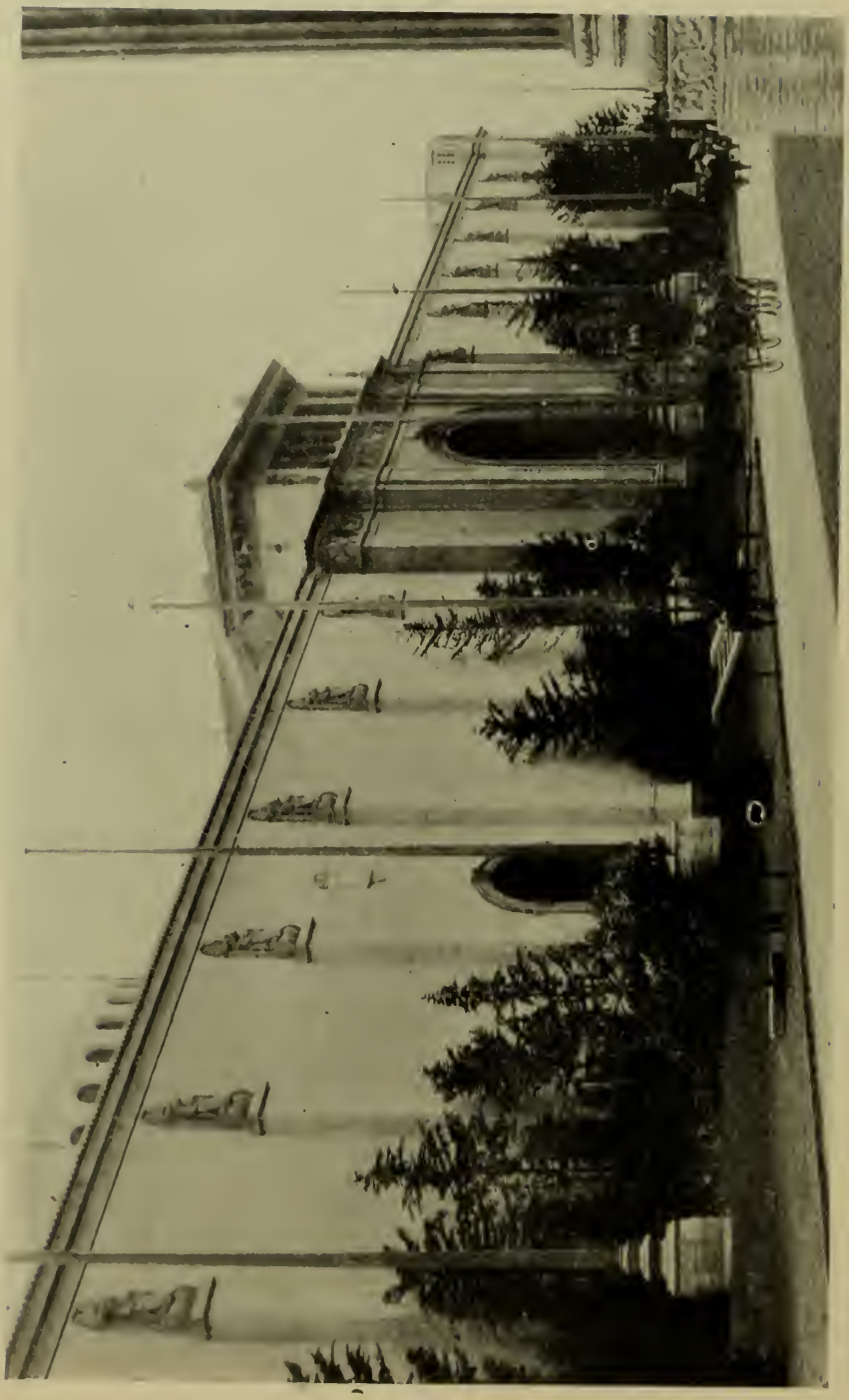
BYZANTINE DOORWAY, PALACE OF EDUCATION
W. B. FAVILLE, ARCHITECT

FACADE OF AN EXHIBIT PALACE ON AVENUE CONNECTING MAIN COURTS

Passing through the Fillmore street entrance to the Exposition grounds the eye is attracted and the attention is held by the portal of the Palace of Varied Industries that stands upon the left. The inspiration of the work, it is stated, was the portal of the Salamanca Cathedral in Spain, a structure that may be said to furnish one of the truest examples of the architecture of the Spanish renaissance extant. The portal of the Palace of Varied Industries was originally purposed as a replica of the Salamanca portal but it is more than that. The original is without color save for the monotone of the whole cathedral, while the reproduction is enhanced through the application of the blues and reds and browns contained in the decorative detail of the Exposition color scheme. It differs also from the original in being somewhat larger and that the niches are occupied by figures of modern sculpture in place of the figures of saints common to the ecclesiastical architecture of the Spanish period. Notwithstanding these differences the reproduction has been pronounced the purest architectural unit of the entire Exposition. It is probably the costliest artistic unit, also, as more than $15,000, it is stated, has been expended in obtaining drawings and making models of the original from which the present portal was designed and cast.

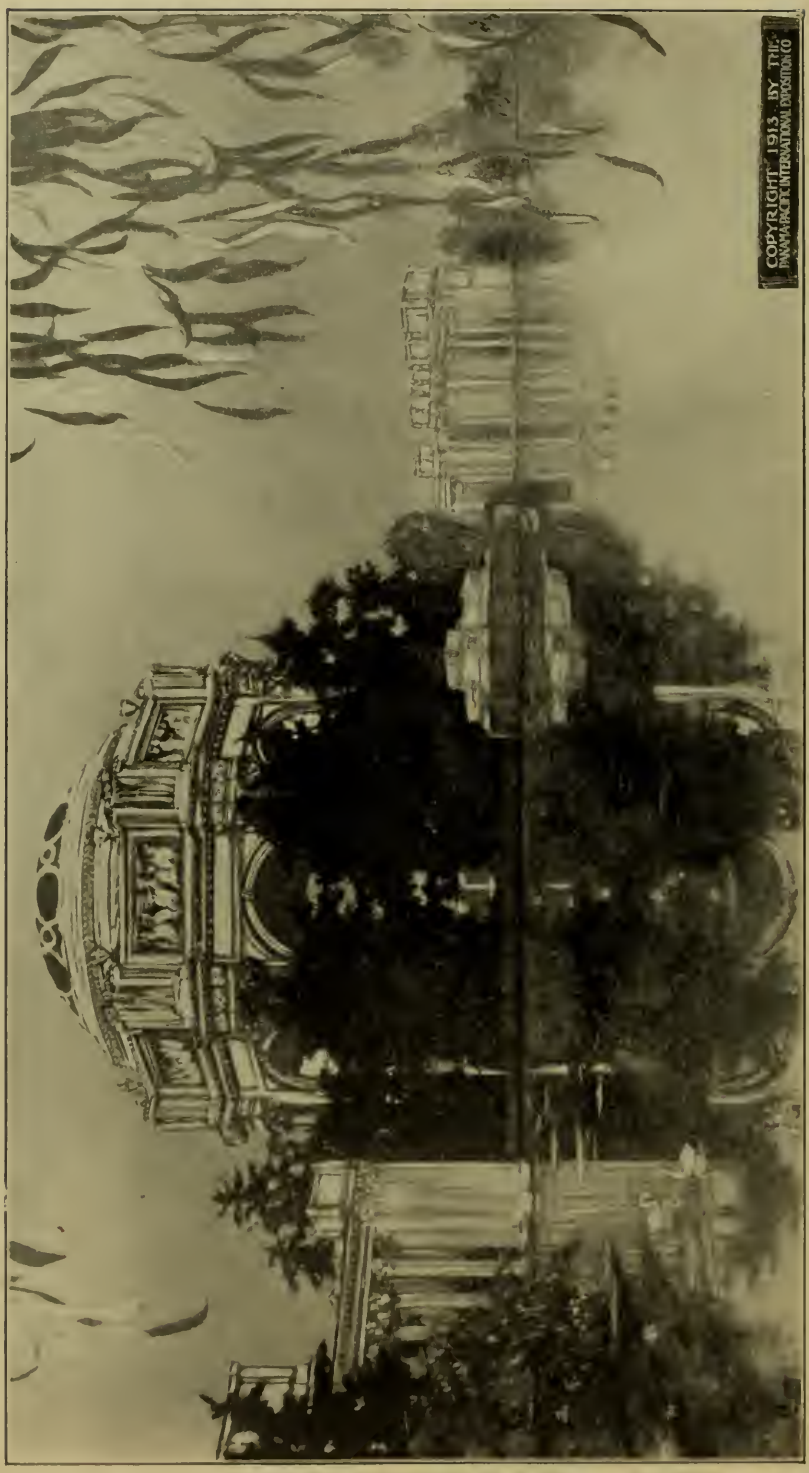
* * * *

Indiana will make a wonderful educational exhibit. Special attention will be devoted to the consolidation of rural schools, agricultural, vocational work, domestic science and playground activities. The remarkable vocational work along the lines laid down by Tolstoi in Russia and by Farrera in Spain done in the all-day and all-purpose schools of Gary, Indiana, will be extensively featured with demonstration classes. This system, the only one in operation in America, does away in large measure with books and recitations.



PALACE OF MANUFACTURES AND VARIED INDUSTRIES

VARIED INDUSTRIES BUILDING IN FOREGROUND AND MINES AND METALLURGY BUILDING IN THE DISTANCE



LAGOON AND PALACE OF FINE ARTS, AN ALL STEEL STRUCTURE
BERNARD R. MAYBECK, ARCHITECT

International Expositions

By LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

INTERNATIONAL Expositions are independent kingdoms in their corporate relation with other countries of the world. They are phantom kingdoms wherein the people do everything but sleep. They germinate and grow with phenomenal energy. Their existence is established without conquest and their magic growth is similar to the mushroom and the moonflower, they vanish like setting suns in their own radiance.

Thousands of neophytes of every race, creed and color come with willing hearts and hands to do homage and bear manna to nourish the sinews of a phantom kingdom.

The National Constitution of phantom kingdoms commands that the Spirit of beauty, refinement, education, culture and frolic shall govern. The result is that they contain many palaces and shrines decorated with sculpture and painting and that the earth is studded with fountains and pools within tropical gardens.

Such a Kingdom exists within a wonderful valley bordering on a great sea. It is surrounded by high velvet hills of fine contour and by many real cities.

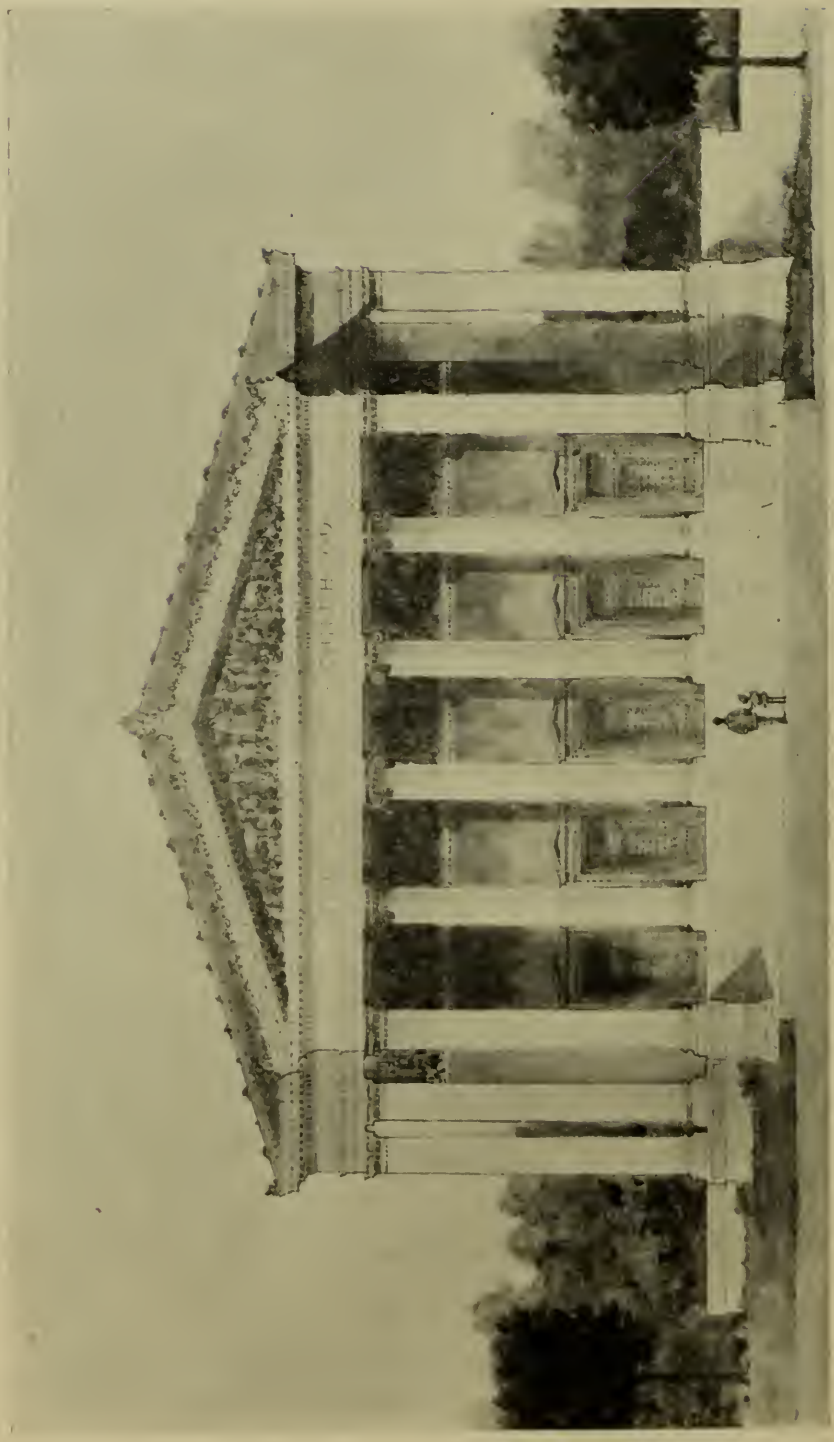
As the people look down on this phantom kingdom from the hill tops, or from ships sailing on the water, they see Architecture nestling like flamingos with fine feathers unfurled within a green setting.

If building Phantom Kingdoms symbolizes man's highest aims on earth, then the same is true when building Real Kingdoms.

Architecture and the sister arts are the most reliable barometers in recording human thought. They are direct exponents of a universal language wherein national progress is most clearly read.

People who build Phantom Kingdoms look hopefully for universal approval by Real Kingdoms.

San Francisco, December 7th, 1914.



TEMPLE OF CHILDHOOD
LOUIS C. MULLGARDT, ARCHITECT

COURT OF SUN AND STARS
McKim, Mead & White, Architects

An Architect's Impressions of a Wonderful Exposition

By W. GARDEN MITCHELL, A. I. A.

ON that narrow island promontory, hemmed in by two broad rivers, whose waters chafe for the last time their binding margins, ere they merge and are lost forever in the sea, stand the towers and turrets of our eastern gateway.

A city audacious above all others, from its feet planted in the rock, far below the rush of waters, to its wind-swept summits that soar above the level stretches of the earth into the exalted places of the cloud and sky.

A city rampant in expression of individualism, the ultimate in separativeism, a cry of self for self and self alone, the antitheses of communism a contradiction in terms of that national illusion, wherein it is presumed that the rights and convictions of the many shall transcend the desires of the few. A city of giants and pigmies, giant calling unto giant, across the silent voids that lie over the roof tops of humbler habitations, habitations whose very existence is all but forgotten in the pride and arrogance of these skypiercing monsters.

Far down the bay, where sea and river meet, these grey masses of the cities' towers and bastions rise as the peaks of distant mountains from out the hollows of the deep, and at night when the lengthening shadows have darkened the streets below and the dying splendor of the day has gilded for the last time the pinnacles of the city's towers, and the darkness of night descends, then from out the firmament a myriad of lights gleam forth, holding us spellbound, as we stand in wonderment, endeavoring to discern which are the lights of earth and which the lights of sky.

This is the city of individualism.

From ocean to ocean is but a step; behind us are the grey waters of the Hudson and the green of the Atlantic, green and full of action; and in front the blue of the Pacific, soft and rippling, rippling with the innumerable laughter of the sea.

INTERIOR VIEW, COURT OF FOUR SEASONS
Henry Bacon, Architect

HALF DOME, COURT OF FOUR SEASONS
Henry Bacon, Architect

ENTRANCE TO COURT OF FOUR SEASONS
Henry Bacon, Architect

PALACE OF VARIED INDUSTRIES

SECTION OF MAIN ENTRANCE.
PALACE OF MACHINERY
Ward & Blohme, Architects

VESTIBULE OF MAIN ENTRANCE, PALACE OF MACHINERY
Ward & Blohme, Architects

You of the East the morning's dawn embrace,
We of the West day's dying splendors face,
And in its golden bars a glorious morrow trace.

This is the utmost limit of my land,
And here perforce the ocean bids me stand.
And here in majesty of queenly state,
I rear the city of the Golden Gate—

A city on whose head a crown shall shine;
Not of the East nor West, but every clime;
Flower and fruition of all hope, all time.

A narrow inlet from the sea connects the broad waters of the ocean with the landlocked bay of San Francisco. From the heights of the city we look down upon this narrow channel a few miles in width and length; gleaming waters, blue and radiant in perpetual sunshine and beyond the purple walls of the everlasting hills. At our feet and about two hundred yards below and fringing the level shore line of the bay are the buildings that are to be the meeting place of the nations in friendly industrial rivalry, an assemblage of the arts of peace. In the distance purple mountains, at their feet a stretch of liquid turquoise, and as a margin, coral in pink and white, mingled with the colors of sea shells.

Domes and towers, arcades, long stretches of unbroken wall surfaces, punctuated at intervals by gorgeous doorways vivid with the tints of dawn and twilight.

Domes that mingle the green of earth with the blue of sky and walls, that reflect all the tawny tints of the hot grass of summer and the desert sand, amber and red of sun-scorched rock and the soft blue of distant hills.

As viewed from these hilltops the scene is certainly as looking down upon a city of enchantment and far transcends the effect produced when individualism runs rampant.

If the towers of the Hudson stand for individualism, and they do so stand mightily, surely this composition of the Panama Exposition may be taken as an earnest of that time when some form of socialism, communism, unity of purpose, common weal, brotherhood, universal sympathy, call it what you please, shall inspire us with one hope and one faith, when we shall march side by side, each for all and all for each. Gathered together, having one shepherd and one fold.

Architects, artists, sculptors and an enlightened public are continually asking why it is that we cannot build or paint or mould as they did in ancient Greece, in the days of the renaissance or in medieval times. And while there may be no single answer, one thing appears evident, that we cannot hope for any marked improvement until we again reach a period when national (and that I imagine means universal) homogenity of thought and action shall give way to that heterogenity that divides a house against itself, divides it at least along many if not all lines.

In the process of the suns, we in our time have arrived at that point at which we find ourselves adrift, broken loose from the sheet anchor of some specific faith; yet without such, rudderless, and driven about by every wind of doctrine. In architecture we lack independence, believing in everything, we believe much in nothing, or if perchance we have some national beliefs they do not as yet include art and architecture, and thus we renounce all independence, have no courage of conviction, no expression to make of ourselves, but have become as vampires, endeavoring to draw vitality from the

forms of a more vigorous past, reclothing the dry bone of antiquity in habiliments not their own. Such resurrection can at the best be but a poor substitute for that creation which is bone of our bone and flesh of our flesh, and vitalized by the blood of a day that has not passed.

There shall be one shepherd and one fold. This means a fixed faith, recognized social conditions, contentment and placidity, a household at peace with itself and united in fundamentals.

The Exposition buildings impress me above all else with this necessity of unity of thought and homogenity of action.

Here for almost two miles along the shores of the bay, mass after mass, punctured at suitable intervals by towers and domes, rises and blends in one harmonious whole, broad in treatment, heroic in scale, delightful in tint, giving us both nobleness of form and enchantment of color, neither frivolously gay nor ponderously somber, but strength and beauty in graceful proportion. Could the same scale, homogenity of composition and delight of color be extended all along our bay shore and up over the innumerable hills on which our city is founded, I think we might justly say that in that day we would have a place of habitation that would rival if not surpass the glories of Byzantium, or those cities which in all ages dreamers have woven in the fabric of their imaginings.

* * *

A Metropolitan Hotel in the Exposition Grounds

CONSTRUCTION is well under way on the "Inside Inn," a great hotel with a capacity of 3,000 persons and located within the gates of the Exposition grounds. The hotel will be a city in itself, provided with barber shops, drug stores, candy shops, express office, news stand, haberdashery, manicure parlors, novelty stands, soda fountains, Turkish and Russian baths, postoffice sub-station, restaurant and railroad ticket offices. It will be operated under the direct supervision of the exposition management.

The hotel is located at the Baker street entrance of the grounds and its veranda will command a superb panorama of the sea. It is close to the Japanese pavilion and near at hand to the Palace of Horticulture. A direct street car lines connects the Baker street entrance with the principal railroad stations of San Francisco. Visitors desiring to leave the grounds from the Inn may do so without paying additional admission fees. Many of the great exposition spectacles may be seen directly from the broad verandas of the Inn. Edward T. Foulkes is the architect.

INSIDE INN
Edward T. Foulkes, Architect

SHOWING SCHEME OF FLASH LIGHT ILLUMINATION OF THE GROUNDS

The Illumination of the Exposition Buildings

By W. D'A. RYAN.*

CONTRARY to general expectation there will be no outlining of the Panama-Pacific Exposition buildings with incandescent lamps. Outline lighting has been done about as well as it can be done. The streets of every big city today are ablaze with it, applied in a thousand ways, even made to represent motion. Outline lighting, while undeniably beautiful from a distance, produces contrasting glare and dark spaces, and when it comes to getting the effects from mirror surfaces, such as lagoons and moats, the results are very incomplete. Of course, all of these effects, not so very long ago, were highly satisfactory and we caught our breath in admiration when the current was turned on at yesterday's exposition. But today, or rather tonight, we are after something new. Fortunately, since the last big exposition the advance in the science and art of electrical engineering and the development of electric apparatus has been so great that we are now able to produce effects with economy which would have been physically impossible five or six years ago. In 1915, there will not be a single piece of lighting that was ever used before. Everything will be new.

You have noticed, when motoring at night, as you swung around some corner and your front lamps shone full upon some object by the roadside, perhaps the brilliant billboard, how the colors of the object leapt out at you from the night. Picture to yourself, which you cannot really do—we shall all have to see it to realize its beauty fully—the noble facades of the exposition palaces, the solemn and lovely masterpieces in sculpture, softly colored, the stately pillars standing against the rich red of their Pompeiian background, the great mural paintings spread across the walls of the patios, even the blossoming reaches of the tropical gardens; picture all of these in the radiance of an illuminating system something like your automobile lamps raised to the nth power. Imagine the vermillions and burnt orange the gold and the Italian blues, each picked out and made visible by the particular light that reveals that color in its full splendor.

* Mr. Ryan is Illuminating Engineer of the Exposition.

If you wish, you may have an ivory colonnade in the full glory of moonlight. It will not matter that the summer fog has swept in from the Pacific and made an artificial gray sky above you. The colonnade will stand there, dreaming of ancient Greece, drenched in silver radiance, apparently from the moon. But do not look for moonlight in the great gardens to the south. The moon is no lover of flowers. She turns their scarlet bravely to shadow; only the pale blossoms profit by her light. Instead you shall find there another illumination, a scientifically chosen light that shall make each flower glow as though the sun were overhead. Indeed, even the wizard, Burbank, may marvel at what this lighting may do in intensifying the brilliance of the poinsettia and the canna.

Deep in the lagoons and carefully placed water-spaces will appear the perfect and complete reflections of the brilliant walls and towers of the exposition, not striped with lines of light on areas of shadow but glowing in all the radiant colors and contrasting surfaces which architect and sculptor and colorist have created for them. And high upon battlement and turret the flags of all the nations that have met together in this great festival will not be lost against the night sky but will be brought out in full value. There will be electric fountains, but no water will flash in them. Instead, smoke and steam, much superior media for such effects, will be sent into the air and turned to glory by the rays from a mighty scintillator.

It is planned to have a huge locomotive, mounted on a steel turntable, which will develop power sufficient to send it eighty miles an hour. From this machine, columns of smoke and steam will be sent against the sky and brilliantly illuminated.

In the courts the mural paintings will be lighted by concealed lamps set into pillars—a special tubular lamp has been perfected for the fluted columns. Where the lighting of the buildings is direct a dense globe will be used and the intrinsic brilliancy of the lamp reduced to the point where it may be looked at directly without injury to the eye. This is a very important thing in exposition lighting, for the exposition visitor is there to keep his eyes open, and any exposed brilliant source is sure to lead to headaches and consequent irritability.

If it should happen that there came to the exposition some unreconciled soul who, in spite of the novelty and beauty of an exposition fully illuminated and as animated and alive as in the full flood of noonday, should still long for the incandescent lamp along the edges of the buildings, he is to be made to forget that he ever thought such a display beautiful. Have you noticed in a jeweler's some mantel clock of architectural design, outlined or studded with brilliants? Please try to imagine that mantel clock magnified to the size of the Administration building at the exposition, whose tower rises above the city of color to a height of four hundred feet. Imagine it thickly set with jewels, diamonds, topazes, rubies and sapphires. Not colored bulbs but actual jewels, of the first exposition water. They are glass, of a special cutting, cut for different distances and effects, some cut in this country, others necessarily cut abroad. It is rather strange to find that the glass cutters and jewelers had never cut anything in these sizes before, and it was so entirely new to them that it was necessary for the illuminating engineers to measure the index of refraction of the glass. These jewels cost no more than to operate incandescent lamps. In the sunlight they are practically dead, but at night, picked out by lights from masked batteries, they will flash like the realization of a rajah's wildest dream, wherever jewels can add to the beauty of an architectural line or surface or a sculptured form, this faceted glass, pure white or backed with color to imitate any precious stone, will be mounted upon delicate springs so that the least vibration from wind or machinery or even tramping feet may set them flashing. As an example of the use to which these jewels may

COURT OF SUN AND STARS ILLUMINATED

be put, we may take the row of seraphic figures which is to surmount the colonnade about the main court, the Court of the Sun and Stars. These figures will be fourteen feet high and the head of each will be covered with a star measuring four feet across. These stars will be studded thickly with jewels. In such a heroic group as that which will crown the west entrance of the main court, a group symbolizing the east and containing an elephant bearing an Indian prince in all the splendor of the Durbar, these jewels, added to the coloring of the sculpture, will supply magnificence. Huge pearls are being made very successfully on the Tiffany order without the Tiffany prices.

A great scintillator will be mounted off the main axis of the exposition, about five or six hundred yards out in the water. It will be placed on a barge anchored in the bay and sixty trained men will be required to operate the lights. These men will be drilled and the effects will be marvelous. They will go through an evolution of color, throwing gorgeous auroras into the sky. The spread of these colors will be visible in all the bay cities, and on clear nights should be visible in the sky for forty or fifty miles. But the nights will not be clear the majority of the time, and this is fortunate as far as the scintillator is concerned, for the fog will be a great aid in producing wonderful lighting effects, furnishing a background upon which to play a constantly changing color scheme, to soften and intensify the lights at will.

Stand in the Court of the Sun and Stars some evening when this vast dream of the exposition is a reality. Twilight is over. The after-dinner crowd is gathering. As yet there are no lights. Suddenly you are aware of a myriad little jets of light; then light breaks from behind the columns; then the main white light floods the brilliant facades, the jeweled surfaces flash in splendor and the fountains of rosy steam leap toward the sky across which, in three hundred evolutions in colors, streams the aurora.

Somehow, witnessing the bursting of this glory, you will realize, as you have not done before, the significance of the wedding of two oceans.

BIRD'S-EYE VIEW OF JAPANESE TEA GARDEN
G. Takeda, Architect

The Japanese Garden at the Panama-Pacific Exposition

By B. ITO, Assistant Architect of Japanese Exposition Buildings.

WHOEVER visits the Panama-Pacific International Exposition should not fail to see the Japanese garden on the south side of the Fine Arts building. Surrounded by a verdant hedge of evergreen trees, buildings now being constructed will cost the Japanese government something like $300,000. The group will form a typical garden, the plans having been drawn by a noted Japanese architect, G. Takeda. The plants and all material for both the landscape gardening and the building have been brought from Japan and are being placed in position by native labor.

The garden consists of various plants of Japanese origin, open sheds, stone pagodas, summer houses, and a small stream with its sluggish flow through a narrow and winding path of a valley formed artificially by means of natural rocks. This rivulet is finally led into a large pond which is in the center of the garden.

It may be interesting if I describe here the beautiful exhibit of our plants, because these shrubs will be planted here and there in such a manner that they will represent the four distinct seasons throughout a whole year. As you probably know, in our country each month of the year has its favorite flower. January has its pine, the symbol of evergreen old age, which, with the bamboo and the plum, form in our language of flowers a triad used on all propitious occasions. February has its plum, which is the first tree to bloom in the spring, while the snow still continues to fall. Under such adverse circumstances does it bloom, that the plum has won a reputation for courage among flowers. The plum is followed in March by the peach, a flower that typifies beauty, and, like beauty, quickly fades to give place to another—the cherry. In the early part of April it begins to blossom. In April sunshine it is most ideally and

wonderfully beautiful, and its short lived glory makes the enjoyment keener. But our cherry tree is not a cherry tree in your practical and material sense. With its flowering its mission is accomplished. It does not have to work for a living and produce a crop for the market. When its burst of beauty is over nothing more is expected of it. The short lived cherry is succeeded in May by the Wistaria, which was introduced into this country by Dr. Wistar. You will see a most beautiful exhibit of Wistaria in our garden next summer. This is followed in June by the iris, and in July, the morning glory, which refreshes our eyes with its many tints. The lotus in the August and the so called "Seven plants of autumn" follow next. When these plants begin to fade one by one in quick succession, chrysanthemum will take place in the month of October. It is time for every lover of nature to sally forth among hills and dales "a-maple-hunting" in the month of November—that is the brocade of foliage. But the chilly breeze of December will shear branches of their gorgeous drapery with aid of passionless frost. The designer of our garden tried to express such a scheme of a whole year referring to our floral world.

The prominent feature of our exposition buildings is the reception hall. It is erected in about the center of the Japanese section, facing towards the water of our artificial pond. The building covers an area of 4350 square feet, and its height is measured approximately sixty-five feet from the ground to the top of "Hooh" bird crowned on the very top of the roof. "Hinoki" has mostly been used for both the structure and the finish work. It corresponds to white cedar of this country. No artificial color scheme is applied. Everything is left in its natural color. The richly decorated coffer ceiling will be the object of admiration of many visitors because of its sublime and exquisite execution. The ceiling is as high as twenty-eight feet above the floor. A nobly and delicately designed lighting fixture is hung down from the ceiling, contributing added beauty to the interior decoration.

The style of this reception hall is similar to that of the late Medieval age—beginning with the rise of the military clans at the end of the twelfth century and concluding with the sixteenth century—an essentially heroic age under militant feudalism. It is called the second period in our architectural history. During this period the leader of Minamioto clan organized a system of feudalism and established his government under the name of Shogun in the town of Kamakura. It is one of the most stirring and romantic epochs of our history, and also it is an epoch age of heroism, of daring, of action and achievement. On the contrary "Samurai," (the knights) patronized and fostered different arts, and so we find in the fifteenth and sixteenth centuries the beginnings of tea ceremony, and of flower arrangement. The artists of this age of hero worship and of romantic adventures naturally delight to paint portraits depicting the spirit of activity. This age bequeathed some works of art and literature which may claim immortality. Under such influence of this period architecture found a new trace that is the development of civil architecture. Simplicity was the distinguishing feature of this period of architecture, which can clearly be perceived in the ruined castles or mansions of feudal lords, still in existence.

The tea house that is to be built on a site near the water fall, promises to be unique and attractive. The house consists of the main building and the tea room proper, modeled after a typical tea house of the second period,

that is known as the Tenpyo style. In the main house there is a room with Japanese tatami (matting) about 20 feet square with Japanese furnishings. Here will be provided a number of marble and wooden tables for the invited guests, and they will be waited on by Japanese and American beauties in their appropriate attire.

* * *

The State Buildings at the Exposition

PERHAPS at no previous exposition held in this country will the various states be represented in a more dignified and typical manner than at the forthcoming Panama-Pacific International Exposition.

The appropriations by the various states and territories for this representation, range from $1,100,000, the aggregate of that from New York, to commensurate amounts by smaller and newer states.

Visitors to the Exposition will find in the various buildings erected, suggestiveness of their states that will lend a reminiscent atmosphere of home and inculcate respect for good citizenship.

The Massachusetts State building is, in part, a reproduction of the State House in Boston. It will be 125 feet long by 50 feet wide and occupies a site of 70,000 square feet.

Ohio has also designed a building that is a reproduction of its State capitol.

The California building is typical of the old missions that have played their part in the history of this state. The entire building is in the Mission style and is a graceful tribute to the power that was wielded from these walled communities. This building was described at length in the June 1914 issue of The Architect and Engineer.

The architecture of the Hawaiian building follows the low-lying tropical type so common in Honolulu. The building is in the form of a cross, and at the intersection of the two arms there is a rotunda containing a mezzanine gallery.

The main entrance is at the end of one of the wings of the cross and leads through a pergola into a tropical garden roofed with glass. At either side are the reception and waiting rooms and beyond the gardens is the rotunda.

Across the rotunda is the aquarium wing, and in the center of the rotunda is the pit, 20 feet in diameter, containing a reproduction of one of the burning lakes of the volcano "Kilauea."

In the angle between the wings which radiates from the rotunda will be four dioramas consisting of artifically illuminated scenes of typical spots in Hawaii.

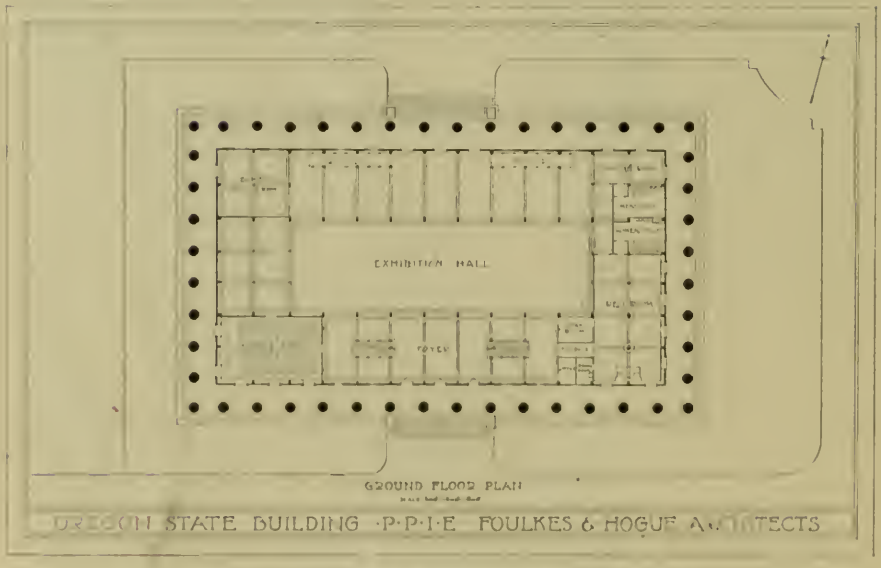
The aquarium will be equipped with tanks containing the rarest and most beautiful fish of the Pacific ocean. Hawaiian singers will provide music from the rotunda.

The Philippines are not to be behind the other commonwealths that are to exhibit under the Stars and Stripes, and the Philippines' government has appropriated $300,000 of which $75,000 is to be spent on the building alone.

The Oregon building is a duplication of the wooden prototype of the celebrated temple of Athens. It was designed by Messrs. Foulkes and Hogue of San Francisco and Portland, Oregon, and is 250 feet long, 150 wide and three stories high and cost $75,000. The body structure is surrounded Parthenon-like by forty-eight magnificent log columns, each six feet in diameter and forty feet high. There are forty-eight columns, in-

CALIFORNIA STATE BUILDING IN THE MISSION STYLE OF ARCHITECTURE
THOS. H. F. BURDITTE, ARCHITECT

MAIN ENTRANCE TOWER, CALIFORNIA STATE BUILDING



GROUND FLOOR PLAN, OREGON STATE BUILDING
Foulkes & Hogue, Architects

Foster Vogt Co., Builders.

ORLGON STATE BUILDING
BUILT ENTIRELY OF NATIVE LOGS
FOULKES & HOGUE ARCHITECTS

HAWAIIAN BUILDING

Lester H. Stock, Builder *C. W. Dickey, Architect*

stead of the classical forty-six, so that each state of the Union may have a column dedicated to her honor.

The great logs of the Oregon Building were donated by different mill men of Oregon. The logs weigh thirty tons apiece and were brought south, some by rail, a log to a flat car, and some by water.

The real architectural problem presented by the Oregon Building was to bring it into harmony with the Exposition plan. A log adorned building typifies Oregon with its vast lumber industry better than any other design could. But a building of monkish brown, no matter how classical its proportions, is a somber heavy thing. In front of the Oregon Building, is the California Host Building, a mission-like structure, and in close proximity are the Exposition Exhibit Palaces, finished in creamy white to imitate travertine marble, and embellished with soft beautiful colors. The whole Exposition color scheme is a joyous one; the Oregon Building threatened to be a funeral note. The architects realized this and so planned to brighten and lighten the building so it will be one of the joyous sisterhood of Exposition buildings.

The really notable feature of the Oregon Building color scheme will be the mural painting in the pediment facing the California Host building. This painting will be the work of the Du Mond brothers, and will depict, in decorative style, an immigrant train on the Oregon Trail. The canvas will be 115 feet long and is being painted in three sections so that the center picture can be used alone and the two triangular ends joined together will make a perfect grouping. It is planned after the Exposition to place the painting in a public building.

An attractive feature that will add to the interest of the Oregon Building will be bronze Medusa shields six feet across, that will adorn the log columns. The shields will be embellished with the colors and shield of the state to which the column is dedicated.

Idaho was the first state to have her building completed at the Panama-Pacific International Exposition. The building, which is an attractive design in modern renaissance by Wayland & Fennell of Boise, Idaho, faces San Francisco bay, with an unobstructed view. It has a frontage of 150 feet and an average depth of fifty feet. The building is designed to give as much floor and wall space for the display of Idaho's resources as possible.

* * *

Some Notable Achievements in Plastic Art at the Exposition

THE very elaborate scheme of sculptured embellishment of the buildings at the Panama-Pacific Exposition suggests the same thought that was dominant at the St. Louis Exposition: that it is to be regretted that a result so well conceived and which will undoubtedly be worthily executed, should be of perishable material and serve but an ephemeral purpose, to be in the end destroyed or permitted to fall to decay.

There will be presented at this exposition an opportunity for our National Government to retrieve itself of the reproach, often made, that as a people we are indifferent to any scheme under government patronage that is promoted to advance in a material way the cause of the Fine Arts in this country.

An appropriation that will secure the perpetuation in enduring material of the best accepted examples that shall form a part of this exposition would preserve many important works of the sculptor's art for the education and pleasure of future generations in addition to giving evidence that as a nation, we are alive to the importance of our aesthetic advancement.

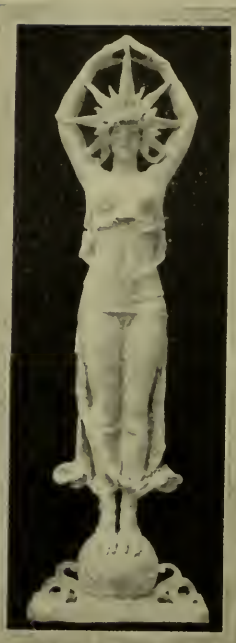
Of the several works of sculpture for the Panama-Pacific Exposition the most important is undoubtedly the group of The Nations of the East. This group will be strikingly identified with one of the most imposing architectural features of the Exposition, as it is intended to surmount the huge triumphal Arch of the Rising Sun on the eastern side of the vast central Court of the Sun and Stars.

The highest point of this group, the howdah of the elephant, will be forty-two feet above the base of the pedestal upon which the group stands, and when in place on the summit of the arch, will tower 188 feet above the floor of the court. The unmounted figures are an average of thirteen feet six inches high, while the animals—the horses, the camel and the elephants —are all acurately modeled to scale. In its entirety the group will suggest the mysticism of the East; and is the collaborative work of the sculptors, Roth, Lentelli and Calder.

In the Court of the Four Seasons, another of the vast enclosures that give such large scale to the architectural treatment of this exposition, the sculpture will be peculiarly in consonance with the theme of the court and will also be in a large measure identified with its architecture. Niches in the four corners will be cut and in these figures of the four seasons placed. Spring, one of these groups, has been executed by Mr. Furio Piccirilli. A group, representing Ceres, the goddess of agriculture, will occupy the central position in this court. Two other figures representing Rain and Sunshine, are particularly well conceived and suggest these benign elements that contribute to the harvest.

Idaho Building is equipped with modern plumbing as good as that being installed in the more expensive buildings. The lighting facilities are also up to standard.

Philosopher



Star Figure

The Priest

Sunshine

Rain

Autumn

Summer

Spring

SELECTIONS FROM THE MANY BEAUTIFUL SCULPTURAL SUBJECTS

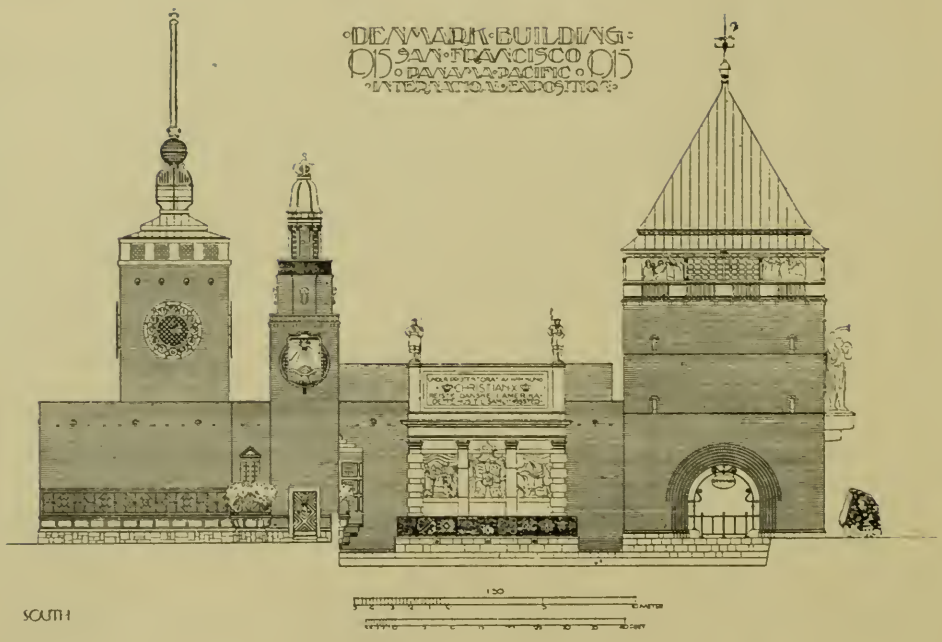
CROWNING GROUPS, COURT OF THE UNIVERSE

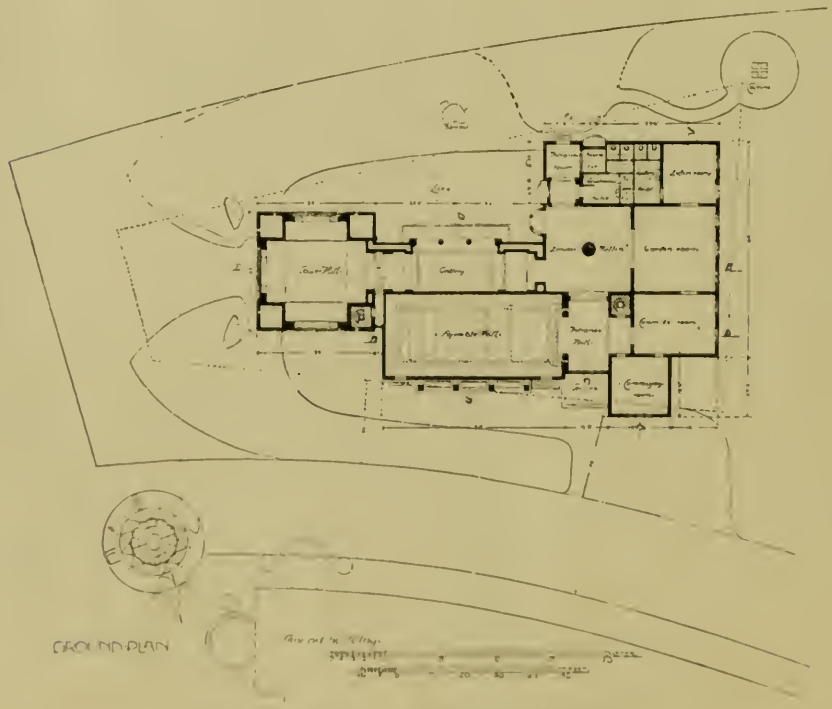
Nations of the West

CALDER - LENTELLI - ROTH - SCULPTORS

Nations of the East

CALDER - LENTELLI - ROTH - SCULPTORS





GROUND PLAN OF DENMARK BUILDING

Architecture*

By W R B WILLCOX, F A I A

A WELL-KNOWN philosopher has said that "to know and to have learned much is neither a necessary means of culture nor a mark of it, and if need be agrees excellently with the opposite of culture, barbarism—that is, the absence of style, or the chaotic mix-up of all styles."

In addressing the Department of Architecture in this great State University, I ask consideration of that proposition. Probably no field of human endeavor, from its very nature, is so apparently fitted for a continuing display of culture as architecture: the state of architecture of a country, to a remarkable extent, is the measure of its culture. That is quite accurately true. The architecture of a country, as a national product, can never rise above the level of its national culture. Individual buildings may surpass the average of merit, but when they do so they only the more indicate the fact. The same, in lesser degree, may be said of music, literature, painting, sculpture, etc., but in respect to them the product is, in most cases, the measure of the culture of the author and may easily be above the average culture of the people among whom the author lives. The reason is easy to discover, since in the exercise of such arts, the author is more often unmindful of the impression to be made upon the public and he is without outside direction as to what shall determine the character of his work. But with architecture, the situation is different, to the extent that the architect is limited in the solution of any given problem by many conditions entirely apart from his control. Into his work the owner usually, and quite rightfully, obtrudes his personality in such a way that the resulting building is an interpretation, not altogether of the architect's personality, but of that also of the owner. The architect projects himself into his building to a greater or lesser degree, but if he accepts his problem conscientiously, he is bound, first of all to encompass, so far as possible, the individuality of the owner. In fact, it is the owner's needs which dictate the conditions of the problem; and I am quite ready to say that in those cases where the architect has imposed his personality upon his work to the exclusion of that of the owner, he has so far failed to prove himself a real architect.

So knowledge is not the quality which should denote our architecture: "not knowledge but ability, not information but art" is that through which life should bear witness.

What has knowledge to do with the insight, the sympathy necessary to interpret an individual's or a nation's feelings? Knowledge may assist to a judgment of technique, but such judgment is based upon rules governing externals; it is impersonal and unsympathetic, and reaches nowhere to the real meaning of the message conveyed by means of the work itself. But it is the genuine purpose of architecture that it should convey a true notion of the needs it professes to serve, and for that reason we must be careful to guard ourselves against an easy judgment of it by its technique. In passing, it may be well to remind ourselves that in the schools the technique of architecture is liable to become confused with the technique of drawing, which latter is a graphic art and bears but a temporary relation to architecture. Think not that this is lightly said; it is important that we should appreciate how architecture may be—and doubtless innumerable times has been—produced without a single drawing. Architecture pertains to struc-

* An address delivered at the opening of the School of Architecture, University of Oregon, November 7th, 1921.

ture; drawing is a means of study and an aid to construction, but architecture may not, with a degree of accuracy, be judged by, or from, the drawings which depict it.

Hence, in our schools, unless we are watchful, there is the possibility of viewing the subjects of our study and attention as something detached from the realities of life. This is less likely to result where the subject is one which has a quite obviously practical bearing, but in the study of any of the branches of what is called art, it is easy to get out of touch with the real relationship which such work bears to life. We are liable to view the work done in the course of study as an end in itself. Art for art's sake! This attitude toward our studies is possible in any branch. During my earlier school days, and even in later years, I recall how little stress was laid upon the true relation which all our efforts had to the common pursuits of life; upon the fact that they were simply a means to an end and not an end in themselves. One was ever mindful of the need for pursuing certain studies for the sake of marks and standards. One must read so much Caesar to be able to read so much Caesar when the need arose, and that need arose at examination time. One struggled with the binominal theorem because it was there in the course to be struggled with, to be disposed of, so that one could go on to the disposal of something else for the same reason.

In the practical branches, the closer relation which the concrete problems dealt with sustain to the experiences of life help to impress the mind with the principal reason for solving them, but even with them, it is easy to omit the practice of reflecting upon their ultimate purpose, which is the training of the mind, equipping it to act independently and logically in connection with similar, though fresh, problems which arise in pursuit of any work in the world that is worth while.

But when we come to the branches which are concerned with expression, such as literature or music, and especially architecture, the solutions of the problems devised for our practice are much likely to be regarded as the sole reason for our study. It is in this connection that we are liable to lay too great stress upon knowledge and information in the preparation for an architectural career. If we do not reflect upon the meaning, to us, of the wealth and architectural examples in the world, our acquired knowledge of particular specimens of architecture may crowd out an enthusiasm for a search for that intimate, personal sympathetic expression of the human aspirations, which on its artistic side, is the function of architecture.

It may well be that were we deprived of the great stores of knowledge of architectural monuments, we could, with laborious effort, still develop an insight into their real purposes and acquire an ability to serve them directly and frankly. However imperfect our structures, they, then, would be the result of a living art, an art virile, if immature, charged with an instinct for truth, though sometimes hesitating and uncertain, in expression. Such structures would be indicative of an initiative, an independence of thought, a freedom from servile adherence to forms adapted to other conditions, which is the work of true culture. Thus circumstanced, we may imagine how our people would find interest in architecture which, it is to be regretted, they seem not to find today. And if we hold our thought to that condition among our people we may possibly discern the error in our own methods, methods of which—it is time to acknowledge—have laid too much weight upon knowledge, not ability—information, not art. No more than they, the people, need we architects display a knowledge of the world's great buildings, or of their classification as of nations, as of "styles," if we

devote ourselves to the expression of their needs and desires. Let our study of the architecture of the past yield us an insight into the desires and needs of those older peoples, let it reveal to us the emotions with which they were animated, and let us learn from their examples the abstract subtleties which made the forms adopted appeal to them. Let us discover, if we may, the sentiments to which their buildings gave expression. It is not a cold analysis of a work of art that awakens enthusiasm, but rather it is some useful combination of lines, of colors, of materials and environment, which stirs the imagination. And this effect upon people is confined to contemplation of no single manner of buildings, no single so-called "style." Seek out the great monuments of any people and in them you will find exemplified those inherent qualities of beauty which have to do with the relation of lines and spaces, of voids and solids, of plain field to ornamentation, of color contrasts and harmonies, of rhythm, of cadence, of accent, of strength, of grace, of power, of delicacy. And these qualities are not limited to certain types of buildings, to particular details of materials, but extend to and produce the beautiful in buildings of whatever origin.

Beauty when thus set forth, whether in a Sistine Madonna, a Michaelangelo's David, a Beethoven Sonata, or a Taj Mahal, makes its appeal directly to human instincts and emotions. Its appeal has nothing to do with knowledge, with that knowledge which was the foundation for its structure. The knowledge upon which those works were built made no bid for recognition, but served only to enlighten the mind as to great principles, and freed the soul to express fresh ideas. It provided a sort of new alloy, with which the artist worked.

Consider now how it seems to be with us today, when people generally have little feeling for architecture. What can it be that has cut them off from an interest in it? They must have buildings, yet it is a frequent saying that they "know nothing about architecture," "have no appreciation for good architecture." That seems to be the heaviest indictment against our profession today, that our own people are out of sympathy with what we are doing, are frankly contemptuous of our efforts, or as frankly ignorant of what we would call architecture. Does it not behoove us to examine ourselves and see in how much we are to blame?

What is this architecture with which we busy ourselves, and for the people's ignorance of which we in turn are too accustomed to express? It seems to me that architecture with us is too much regarded as a definite, fixed and finished thing—a collection of concrete examples of past structures. It is of those examples that we strive to gain knowledge, and our own appreciation of architecture is largely commensurate with the amount of information we may have obtained of past structures. We are inclined to measure our present-day efforts at design by their adherence to the obvious characteristics of those earlier buildings, and without that knowledge of them which our study has yielded us, we would be quite helpless to judge of their merits as architecture. Out of that study we may have gained an insight into the subtler qualities of proportion and the like, yet how seldom have those intangible elements thrown down our obsession with the concrete devices employed? How often do we find those devices grouped without concern for proportion or other qualities which pertain to art or skill? Such structures predominate, structures for which men often well schooled are too frequently responsible, and it seems as if that could be only because they have been confused with a false culture, a pseudo-culture, which sets up knowledge instead of ability, information instead of art, as its measure.

And since we find this state of things within the profession, is it to be wondered at that among the people there is little feeling of sympathetic interest in what they are led to believe is architecture? How can it be otherwise, when to judge of it one must devote himself for years to the acquirement of knowledge of the structures which comprise the architecture of the past? The public has neither time nor opportunity to imbibe the knowledge from the stores of which the architect is wont to choose his theme and the characters with which it is expressed. If specialized knowledge of historical monuments is essential to appreciation, there is little reason why the architect should sniff at the ignorance of the public concerning what he calls architecture; the ignorance is real, but blameless.

We may observe today a similar attitude on the part of our law courts and the public with respect to the work of the former. The courts are disdainful of the lack of appreciation of the public for what they pronounce to be good law, citing precedents from age-old statutes, while the public is becoming more and more free in its expression that what may have been the law in the past is a matter of little interest to it today. It will admit that the general principles on which the older statutes were based and interpreted may have been logical and applicable to former conditions of life, but that today it needs an interpretation of those general principles better adapted to our present conception of life and social relations.

The courts have been substituting a knowledge of legal precedents for a fresh insight into their meaning and a new expression in terms whose fitness even he who lacks the knowledge still may comprehend. But the legal profession today is uneasy and introspective; it is being forced by an indifference to, or contempt for, its pronouncements on the part of the public, to examine into its own position and methods and to modify its practices.

The situation is not without a parallel in architecture. The profession is already conscious of a degree of aloofness from the everyday life of the people, of a disparaging authority, and more and more often it is led to inquire into the reason for it.

Now, what relation shall the schools bear to the present situation? Should we not expect them to lead in an effort to win the confidence of the public? It is not easy for the older ranks of the profession to amend their ideals. Constant contemplation of those ideals which may have been established at an earlier time tends to fix them and prevent their expansion. But youth is engaged in shaping its ideals, and it should consciously strive to avoid all practices which tend to circumscribe them. They should carefully analyze the relation between courses of study and the purposes the latter are intended to serve, and never to lose sight of the fact that they are but means to ends, not ends in themselves. And what nobler attainment may there be for all our preparation than the power, the ability, the art, to speak understandingly to our own people of things which we believe can be made to free them from dull gray lives amid monotonous surroundings? To do so, however, we must arouse their curiosity, awaken their imagination, quicken their interest, which we cannot hope to do while we drone on in foreign tongues.

So in the acquirement of a broad knowledge of architecture, of the manner and method of other times, we should always be aware of the fact that we are studying, as it were, a foreign language, a language with which the people of our own day are unacquainted; that we are discovering it to discover wherein lies the secret of style—that combination of refinement and grace, dignity and strength, that aptness to purpose which distinguishes all nobler works; not with the ridiculous purpose of attempting to speak in it to our own people.

The fruit of study must be an unconscious appreciation of esthetic values, and must pass through the alembic of mind and soul before the architect can hope to use the secrets he may have discovered in a way to impress the people among whom he lives that architecture is something of vital interest to them; before he can hope to acquire that style which is the sign of art and a mark of culture, something entirely apart from the "styles" as classifications of knowledge.

Seldom is there a genuinely new thought in the world, yet how variously beautiful are the many renderings of the same old thoughts! It is said that there are but seven or eight fundamental stories in all literature, yet they are told and retold with such infinite variety of expression that they remain ever fresh and of interest to succeeding generations. So, in the measured drawings of almost every notable building erected in the past two hundred years, we have the stories of architecture rehearsed in varied forms of exquisite beauty, imposing dignity and commanding power; it is for the architect of the present day to acquire the ability—to perfect the art—which shall enable him to repeat them with a freshness which shall win attention.

In order to do so, it is of course necessary for him to improve his skill as a draftsman; he should persist in the practice of drawing until he acquires a facility which enables him to illustrate with ease any architectural subject. But it is a simple matter to exaggerate the importance of drawing in connection with architecture. Many of the most skilled architects have been but indifferent draftsmen. Too close attention to the composition, or the rendering of a drawing, in and for itself, is liable to cause one to forget that after all it is only an imperfect representation of a design which is to be produced in various materials, each of which has different properties, each of which should be treated in a different way, each of which must have a modifying effect upon the design.

The musician, or sculptor, or painter may study his composition in the medium of its actual expression and subject it to his criticism in its final proportions, but the architect seldom, and then only in sectional details, can thus proceed. However, it is desirable that he should indulge the practice of designing in the solid, even at much reduced scale. It will aid him, as will nothing else, to "think in three dimensions." I think it would be well did our school courses require the student to reproduce to a convenient scale one or two problems a year in wax or clay. This can be done in a sketchy way, yet quite accurately as to dimensions and proportions. This practice will assist in the formation of a habit of visualizing his design as a solid, even when developed in the flat. It will help to offset a tendency to regard architectural composition as an exercise in two dimensions.

Everything should be done to establish the habit of thinking in actual structural materials. The student would do well to inform himself—in the school course, if possible—by actual contact, of the characteristics of the various materials, of their suitability and limitations; how they are produced and how used in construction. It would be well if every student could devote enough time to the various crafts to gain an appreciation of their true natures. It will require but a modicum of proficiency in the crafts to indicate their functions, while even that will do much to heighten his realization that architectural design is considerably more than a matter of paper, lines and washes. It will help to bring home to him at the beginning the notion that he is to become a **creator of buildings,** not merely a maker of drawings.

This familiarity with materials and methods of workmanship, this habit of thinking in terms of actual structure, will do much to establish a proper relation between a knowledge of the architecture of today. It will free him from a subserviency to formal precedent and be productive of a healthy originality which shall mark an advancing culture.

But this program can not be effected, or at least so readily effected, solely by the education of the architect. He will need a public with a more widely diffused appreciation of esthetic values than has that public of today, one which has come to realize that a knowledge of the so-called "styles of architecture" is not essential to a judgment of its quality; one that has come to appreciate the ennobling force of the beautiful in our lives; one that has come to demand art as an essential expression of our utilities; one that has come to realize that utility does not reach its highest power until perfected with logic, the reasonableness and the economy of true art.

Thus to prepare for this public seems no less the opportunity of our universities than the preparation of the architects who shall serve it. To direct the minds of all its students to the importance of an appreciation of the fundamental principles underlying all art, to send them forth possessed of the truth that art is, or should be, something necessary to the highest development of our country, to raise before them the vision that our accumulations of knowledge, the development of practical industries and increase of wealth from our abundant resources are but means to an expression of our ideals as a nation, is a function to be exercised with enthusiasm and with faith in its leavening power. Out of it shall grow a combination of forces and a unity of purpose that shall make for the development of the superior abilities, that shall make for the perfection of style, which is the mark of a genuine culture.

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Oregon Now Has School of Architecture

THE School of Architecture of the University of Oregon at Eugene, Oregon, was formally opened on Thursday, November 19th, by W. R. B. Willcox, of Willcox & Sayward, Seattle, who spoke as director of the American Institute of Architects. In his address, which is printed elsewhere in this magazine, Mr. Willcox pleaded earnestly for a redemocratizing of the art. The Oregon school opened in September with a beginners' class of eighteen students, under the direction of Mr. Ellis F. Lawrence, of Portland. He is assisted by Professor E. H. McAllister, in structural courses; by Professor P. P. Adams, in drafting and design, and by several non-professional members of the faculty who have arranged auxiliary courses for the benefit of students in Architecture. The plans call for rapid development of the school as the students become prepared for advanced courses, but no degrees in architecture will be granted for the present, students being sent east for some of their higher work.

Among those who took part in the opening exercises were Mr. A. E. Doyle, of Portland, president of the Portland chapter of the Institute, who brought the greetings of the Portland architects and announced that they would offer a series of prizes for excellence of work by members of the school. President P. L. Campbell, of the university; W. C. Knighton, State Architect, of Salem; Honorable Allen Eaton, and the members of the students' architectural club took part in the exercises.

The Fees of Architects

IN VIEW of the many published statements about the large fee received by Guy Lowell, the architect of the new court house for New York, it is interesting to observe the element of uncertainty which attaches to the profit to be derived from an undertaking of this magnitude, says a writer in the Philadelphia Ledger.

The cost to an architect in preparing his drawings and specifications and seeing that they are properly carried out, in offices run on the best business basis, is at least one-half of his commission. This, however, applies only to the general class of buildings, and not to residential or public and monumental work. The cost is then as high as 75 per cent of the architect's commission.

The United States Government prepared a statement which was submitted to Congress (Senate Document No. 916, Sixty-second Congress, second session) which gave the average cost of preparing drawings and specifications alone, exclusive of superintendence or any other field of expenses, for the years 1905 to 1911, inclusive, to be 6.2 per cent. This was for preparing the drawings for the bulidings erected by the United States Government and done by the supervising architect of the Treasury, a man known for his great executive ability, and, therefore, done with the greatest economy possible.

Reports have been submitted by the State Architect of New York showing that the cost to the state for preparing the plans and specifications made in the state architect's offices exceeds 6 per cent. The cost to the New York Central Railroad for preparing the plans for their new station has exceeded 6 per cent. Therefore, an architect who is able to prepare the plans for a $10,000,000 building at a cost to him of less than 6 per cent of the total cost of the building, must run his office in the most economic manner possible and take his chance that the work may cost him more than his entire fee.

It seems to be the general impression in many uninformed places that an architect makes a few sketches taking a few days of his time and for this work receives an enormous fee. The fact of the matter is that to prepare and carry out the work of a $10,000,000 courthouse will require the services of from twenty to thirty high-priced draftsmen, as well as a number of engineers and specialists on structural work, heating and ventilation, sanitation, mechanical equipment, etc., working for a period of at least five years; will require a large office at a high rental, and with the most economic administration his work will cost about $450,000. This will leave him about $150,000 profit, or about $30,000 a year.

What business man is there who is willing to head a $10,000,000 corporation with a salary of $30,000 a year? What corporation is there of this size that pays its counsel less than this amount? Such men, however, receive these salaries without investing any of their own money to obtain it. The architect must invest about $450,000 in actual cash paid out to receive his profit of $150,000.

All of the above has nothing to do with the professional training and skill of the architect, and for which he receives his compensation. He must, therefore, not only invest his own money and run a large business office with a chance of running it at a loss, but he must give his skill in designing, his knowledge of engineering and construction, and his training in sculpture and mural decoration in order that he may obtain his fee.—Construction News.

"Practice as American Institute Architect"

An Amusing Case Which Came to the Attention of the Committee on Practice

NOT long ago a member of the Institute forwarded to the chairman of the Committee on Practice what would appear to have been a circular letter addressed at random, and bearing the imprint of one who termed himself an architect. In corroboration of the assumption, and as a means of impressing his qualifications, his letter-head bore the legend, "Practice as American Institute Architect." Other members of the Institute may have received one of these singular communications, although but one has so far been brought to the attention of its officers.

In answer to an inquiry as to his source of authority for the use of the legend, the following letter was received:

Your letter of the third instant received yesterday. In answer to your inquiry requesting an explanation of the meaning of the printed note on my letterhead, viz., "Practice as American Institute Architect," the purpose of this notice was to inform persons that I intended to conform and comply with the exemplary standards established by the American Institute of Architects, and not to signify, as the meaning of your letter implies, "A Member of the Institute."

If the printed notice referred to has been misinterpreted, or is not in strict accordance with the A. I. A. regulations, I will have it removed immediately, as it was done to make known, observe, and maintain the standards in practice.

As I am totally unaware of any infraction that the notice herein referred to could have caused, will you please send me a copy of the A. I. A. Constitution and Laws, as I respect and protect all such matters.

I respectfully request and trust that this explanation will be received by you, and considered with the sincerity and fidelity meant by this letter.

Thanking you, etc., ———.

N. B. During 189—, while practicing in ———, I received a communication from the American Institute of Architects, voluntarily stating that I was privileged to membership; as I believe that I have always adhered to the "Institute's Constitutions," that I have known of and not deviated nor deteriorated since then, will you please send me a statement of the requisites of membership?

Further correspondence then developed the following letter:

Accept my thanks for your letter of the ———, inclosing a copy of the A. I. A. Constitution and Laws, received this p. m.

I have read these carefully and have not found an article relating to the matter to which your letters of the ——— and ——— refer. I also notice that the note upon the letter-head was evidently one of a misprinted lot, which was instructed to be and read, "Practice According to Regulations of American Institute of Architects." Several of these were used unknowingly some time ago, which at the time escaped my attention.

As my office is and has been closed for several years, . . . please address communication to my rooms. Respectfully.

While one might accept the use of the misprinted (?) stationery as an inadvertence (an act which is, of course, amenable to the law and not to the Constitution of the Institute), the statement in the last paragraph of the letter does not coincide with the impression which the original letter-head and contents were intended to convey in this sentence: "This office is, and has been during the past 18 years especially equipped to prepare attractive and artistically designed competitive plans." Inasmuch as that letter also referred to a desire on the part of the writer to form an "Associate Architect," according to a "Co-operative Equitable Agreement," one is inclined to question whether the intent of the legend was as much to proclaim the exemplary standards of the Institute as to profit from them in a questionable manner. Still, simple honesty sometimes gets itself into bewildering predicaments.—Institute Journal.

Some Notes on Clays and Tiles

By J. CLARK *

THERE is probably no material so common, and yet, to the average layman, so little known and understood, as clay. Nature prepared and deposited this mineral in every conceivable form and the uses that can be made of it by man with the aid of fire are almost limitless. The commonest brick and the finest china and porcelains are made from clay, but the composition of the material from which they are made varies in proportion to the value of the finished product.

The basis of all clay is alumina and silica, and the proportion of these minerals, together with such other minerals or vegetable matter as may be held by them, determine the value and the uses to which it may be put. The standard of pure clay is called koalin. The word kaolin is a corruption of the Chinese word Kauling, meaning high ridge, and is the name of a hill near Jauchau Fu, where the purest kaolin was found. (American Journal Science, 1871, page 180.) The generally accepted analysis of pure kaolin is:

Silica	47.71
Alumina	36.78
Potash	2.58
Water	13.03

(United States Geological Survey 11, page 39, 1903.) All particles of this clay will pass through a sieve of 200 meshes to the inch. From the perfect clay down to the commonest, an analysis of which shows:

Silica	19.24
Alumina	3.26
Ferric oxide	1.09
Lime	38.94
Magnesia	2.75
Water	1.67
Carbon dioxide	29.57
Phosphorus pentoxide	.23
Sulphur	.53
Chlorine	.11
Organic matter	2.96

(U. S. Geol. Surv., Bull. 228, p. 367) there is found clay containing an ever varying relationship of silica and alumina together with other minerals either adding to or detracting from their value, according to the purpose for which they are intended.

One of the earliest uses made of clay was the manufacture of tiles. They were not, however, made for building purposes, but to receive inscriptions in their plaster state, and when burned made perpetual the writings inscribed upon them. From this early and crude manner of manufacturing and its use, tile has developed into one of the most scientific and exacting industries of the world and covers a wide range of product for this indispensable building material.

Tile used for floor purposes comes under two headings: Encaustic and Vitreous. These terms have no bearing on the shape or size of the tile, but emanate from the material from which they are made. Encaustic tile is made from self-coloring and fluxing clay and in but very few instances is more or less absorbent. The colors of this grade of tile are red, buff,

* President and General Manager of the California Tile Contracting Company, 206 Sheldon building, San Francisco.

black and salmon as well as the speckled tile containing manganese and grog. The clay for this tile is worked in both plastic and dry form and is moulded in shape by striking, screw or hydraulic pressure, using from ten to twenty-five tons pressure and is burned generally in sagers to a temperature varying from cone 015 to 03.

Vitreous tile is a mixture of white burning clays which fluxes completely, making a product impervious to water or acid and possessing the ability to withstand wear possessed by no other material. This grade of tile can be made in a large variety of colors and shades by the use of coloring oxides and minerals. The clay for this tile is never worked plastic; it is subject to the same pressure as encaustic clay and is burned to cone 5. This grade of tile possesses 56 times the wearing value of white marble and from 14 to 22 times greater wearing value than cement.

Tile for walls is generally classed under the heading of Faience and Wall, the bodies or biscuit of each being made from clay producing a hard porous body. The biscuit of the faience tile can be of any color, as it is always coated with an engob which carries the coloring oxide, also a clay that will flux at a comparatively low temperature, at the same time forming a relationship to the previously burned biscuit that will not permit of scaling and cracking. No tile is more susceptible to the influence of the fire than faience; the different temperatures which are bound to exist in various parts of the kiln, be it ever so slight, will cause a shading that adds to the beauty of the tile, at the same time causing markings on the surface very much to be desired.

Wall tile proper is made from the white burning ball clays and on the purity of clay and its freedom from coloring minerals depend its values. High grade pure white burning ball clay that will not warp when pressed for thin tile is not very plentiful in the United States and the talc rock is sometimes used as a substitute. The biscuit of white wall tile is burned to about the same temperature as vitreous tile, but has a porous body, the clay running low in flux.

There is practically no limit to the processes that may be employed in producing a glaze. One of the early methods and one still in use by some pottery manufacturers is to throw salt on the fire and this produces what is known as a salt glaze. Lead is extensively used in glazing, as well as zinc. Probably no two factories use the same formula for producing the glaze on white tile. The glaze in slip form is applied to the surface of the biscuit by passing over a perforated roller the lower part of which turns in the vessel containing the slip, and enough of the material adheres to the roller to coat the surface of the biscuit as it passes over it. After drying the tile is placed in sagers and fired to cone 020 to 012.

No material entering into the construction of a building requires more skill and science to produce than tile. Being manufactured exclusively from minerals which must be treated in the most exacting fashion, else, when they have passed through the fire, we have a product far different from what was intended, and probably worthless.

Tile is the most ancient building material on record, dating back to thousands of years B. C., and no structure of fame was ever built since that time, regardless of its style of architecture, in which tile was not used and made one of the features, for, when the mighty men of old, as well as the wise men of modern times, erected a structure, no imitations were considered, and the best, both in material and architecture, was used. Tile, then, as now, only could be used for the reason that it is the only material for floors and walls in which the colors and shapes can be had, that will

conform completely to any style of architecture, and, at the same time furnish a material which will stand unlimited wear and defy time.

There is nothing of real value without its imitations and the greater the value the more persistent are the imitations, and oftentimes we pay a higher price for an imitation than the cost of the real article we desire. Sometimes this is because we are not familiar with the cost and relative values of the genuine and the imitations, and it is often impossible to get the data showing these differences and we submit to the statements of tradesmen who either mislead or who have no higher aim in their business than to make an immediate sale. While this is true no doubt of all articles of merit and value, we know of nothing that it applies to stronger than tile, and most of them incorporate in some form the word tile in naming their material.

Each year sees some new process and a very few years sees its end. Tile manufactured by the ancients was made by very crude and primitive methods and still it has stood the test of time as has no other material. Now, with modern transportation to assemble clays, the best results are attained by mixtures of clay and not from any one deposit. With hydraulic and screw presses and modern kilns in which heat can be controlled to within a few degrees, all contribute to the production of an article superior to any ever made.

* * *

The McKinley Memorial Competition

Seven architects will compete for the prize offered through a committee of the American Institute of Architects, for the best plans and drawings for The National McKinley Birthplace Memorial, to be erected at Niles, Ohio. The architects are Henry Bacon, 101 Park avenue, New York; Cass Gilbert, 11 East Twenty-fourth street, New York; McKim, Mead & White, 150 Fifth avenue, New York; H. Van Buren Magonigle, 101 Park avenue, New York; Palmer, Hornbostel & Jones, 63 Williams street, New York; J. L. Decker, Niles, Ohio, and Zantzinger, Borie & Medary, 139 South Fifteenth street, Philadelphia, Pa.

J. C. Butler, Jr., of Youngstown, vice-president of the association, says that the name of the architect will be announced as soon as the selection is made.

* * *

San Francisco Hospital Competition

The Consulting Board of Architects of the City of San Francisco, consisting of Messrs. John G. Howard, Frederick H. Meyer and John Reid, Jr., have practically completed the program for a competition for the Municipal Tubercular Hospital Group to be erected near the City and County Hospital, San Francisco, at an estimated cost of $500,000. The money is now available. Three prizes are to be offered. The following is a partial list of architects who have been invited to compete, the list having been made up from architects whose residence address is San Francisco: Charles Peter Weeks, Bakewell & Brown, Ward & Blohme, John Bauer, Jr., W. C. Hayes, Geo. W. Kelham, August G. Headman, Herman Barth, Julius Krafft & Sons, Louis C. Mullgardt, L. P. Hobart, Coxhead & Coxhead and Houghton Sawyer.

* * *

"Zeal: The feeling you have before you secure the thing as compared with 'Stung' which is your condition after you get it."—The Philistine.

GREY TENNESSEE MARBLE MANTEL IN EHRMANN RESIDENCE, SAN FRANCISCO
Designed by Willis Polk & Co., Architects

Executed by the Schoenfeld Marble Co.

Some Hand-Carved Fireplaces

THE accompanying pictures show the possibilities of hand-carved marble and stone for fireplace and mantel work. The designs are by Willis Polk & Co. of San Francisco and the sculpturing was done by the Schoenfeld Marble Company of the same city. The mantels are in the Templeton Crocker, Hooker, Ehrmann, Ralston, White, Griffith, Moffatt and Goldstein homes and represent some advanced ideas in architectural sculpturing for interior decoration. Mr. Polk has succesfully refrained from over embellishment, a characteristic of this firm that has contributed in a considerable measure to its success.

Besides Willis Polk & Co. the Schoenfeld Marble Company refer to such well-known architects, for whom they have executed important commissions for decorative work in marble, stone, granite, etc., as Charles Peter Weeks, Bernard Joseph, Edward Young, and William Knowles. The loan desk, seats, settees, etc., in the library of the University of California, and the altars in St. Luke's church, San Francisco, and St. Paul's church, Oakland, designed by Vickery, Atkins & Torrey, were executed by the Schoenfeld Company.

GREY PAVONAZO MARBLE MANTEL IN TEMPLETON CROCKER RESIDENCE, HILLSBORO
Designed by Willis Polk & Co., Architects *Executed by the Schoenfeld Marble Co.*

MANTI STONE MANTEL IN DR. MOFFATT'S RESIDENCE, SAN FRANCISCO
Designed by Willis Polk & Co., Architects *Executed by the Schoenfeld Marble Co.*

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THE EXPOSITION COLOR SCHEME

Architects who have visited the Panama-Pacific Exposition are unanimous in proclaiming the color scheme of the buildings and grounds the most beautiful of any ever attempted at a previous world's exposition.

Buildings and statuary alike have been colored by pigments introduced into the casting mass of Travertine—the composition chosen for most of the structural and sculptural work. This interesting material is a sort of porous limestone, like that used by the old Italian builders, and with its rough, weathered-looking surface and mellow buff tones still farther softened by the tracery of that delicate vine, the *ficus ripens*, already growing, the walls, columns and statues seem as though several centuries had linked them to the soil. What a welcome contrast to the white and garish buildings one usually finds in exposition grounds!

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ANENT COMPETENT INSPECTION OF CONCRETE

Prosecution for criminal negligence in connection with concrete failures is being urged by those most interested in this type of construction, and the movement deserves support. Such a demand is but natural at the end of almost any winter when the season's crop of failures is passed in review. That drastic action would be taken sooner or later to bring contractors and owners to a sense of their obligations in providing competent inspection on concrete work was not to be doubted.

Los Angeles has done the expected in its new reinforced-concrete building ordinance which requires that the architect, owner, builder or other person immediately in charge of construction shall retain an inspector competent to see that the provisions of the ordinance are complied with. Furthermore, this ordinance says that every such inspector who shall fail, refuse, or neglect to stop immediately the construction of any reinforced-concrete work that fails to comply with the requirements of the ordinance and immediately report any such violation to his employer and the Board of Public Works shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than $500 or by imprisonment in the city jail for not more than six months or both.

This, remarks the Engineering Record, is a very drastic measure. Nevertheless those who have followed closely the history of building failures in the winters of the last five or six years will feel that some such provision was inevitable. Whether it will stand remains to be seen. It seems to confuse private and police functions. It does not appear that the city's inspection force can be dispensed with on account of this provision; and while there would, therefore, seem to be a duplication of work, the other point of view is that it brings the judgment of two trained men to bear on the work instead of one. Moreover, the contractor will look more closely into the competence of his inspector.

MUNICIPAL CEMENT TESTING LABORATORIES

It is a matter of great interest to note that Boards of Public Works all over the country are beginning to appreciate the importance of testing cement. At Los Angeles recently, where complaint was made of defective material, the Board of Works made an examination into the conduct of the testing laboratory and found that while the cement in use by the city had been tested on one day, it had not been on the following four days. They made a peremptory order that in the future thorough tests be made of all cement before it is used and further stated that the Engineering Department would be held to a strict observance of this order.

This is a step in the right direction and should be followed by other similar Boards in the country. A testing laboratory is created for the purpose of testing cement and engineers and Boards of Public Works have the right to rely upon the thorough, continuous and regular testing of all material offered for use on public works. Sporadic testing is not proper testing and is always likely to lead to trouble. The enforcement by Boards of Public Works of rigid rules governing their testing laboratory is highly to be commended.

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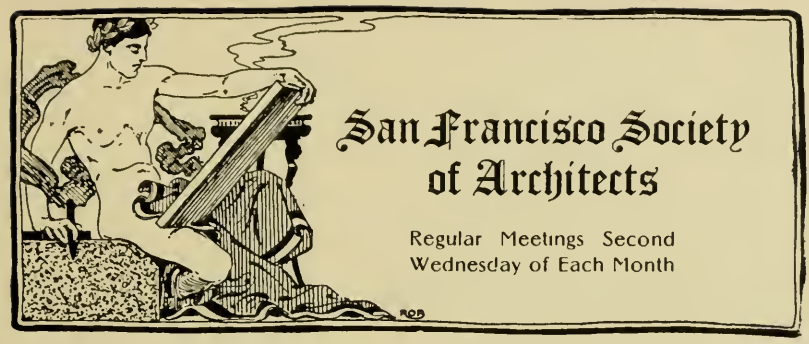
American Institute Officers for 1915

R. Clipston Sturgis of Boston has been re-elected president of the American Institute of Architects for the year 1915. Thomas R. Kimball of Omaha is re-elected first vice-president, Burton L. Fenner of New York secretary, and J. L. Mauran of St. Louis treasurer. The next convention will be held in San Francisco and Los Angeles.



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November Meeting of San Francisco Society of Architects

The regular monthly meeting of the San Francisco Society of Architects was held at the University Club, California and Powell streets, Wednesday evening, November 11th.

Mr. C. P. Weeks, for the Committee on Competitions, reported that the Australian Competition had been postponed on account of the war.

Mr. Bakewell who had attended the recent convention of the Architectural League of the Pacific Coast, told of the transactions of the convention and reported that the Constitution of the League had been altered in several respects, the most important change being that the offices of Secretary and Treasurer had been combined. He announced the League's intention to endeavor to stimulate the interest in architectural exhibitions by placing them under a patronage system and doing away with the customary Year Book.

The next convention of the League will be held in San Francisco in July, 1915, and as it is the only scheduled architectural convention to be held here during the Exposition, it is hoped no pains will be spared to make it a particularly successful one.

An appeal for aid was received from the "Fraternite des Artistes" for the artists of France and their families whose income has been entirely cut off by the war. It was signed by

Henry F. Hornbostel,
President Society of Beaux Arts Architects.
Wm. T. Dannat,
President, Paris Society of American Painters.
Joseph H. Freedlander,
President, American Group, S.A.D.G.
J. William Fosdick,
President, Societe des Anciens de l'Academie Julian.

Further information can be obtained from Mr. Lloyd Warren, 16 East 47th street, New York City.

After an interesting discussion on various subjects the meeting adjourned.

Residence Architect Busy

Architect Albert Farr of San Francisco has several large residences under construction in addition to three or four houses for which plans have not yet been completed.

Extensive alterations to cost $7500 are to be made to the Charles Brandenstein home in Fair Oaks, from plans by Mr. Farr. A contract has been let for a two story house in Claremont for W. Schroder and plans will go out for figures shortly for a $15,000 home for Dr. Guido E. Caglieri at Larkin and Lombard streets, San Francisco.

Masonic Temple for Sacramento

The Bank of Sacramento is understood to have agreed to finance the proposed new Masonic Temple at 12th and J streets, Sacramento, and plans for a five story Class A building are being prepared by Architect R. A. Herold. There will be stores on the ground floor, the lodge rooms will occupy the four upper floors and there will also be a large hall seating 1000 persons and equipped with a revolving floor like that in use in the St. Francis Hotel, San Francisco. The estimated cost of the building is $200,000.

San Francisco To Have Engineering Congress in 1915

Among the general subjects to be treated before the International Engineering Congress at San Francisco, 1915, probably the one having the broadest interest is that of materials of engineering construction, which enters into all phases of engineering activity. The list of topics which will be treated in this section is as follows: "Timber: Preservation, Treatment of Timber," "Substitutes for Timber in Engineering Construction," "Brick in Engineering Structures," "Clay Products in Engineering Structures," "Probable and Presumptive Life of Concrete Structures Made from Modern Cement" "Aggregates for Concrete," "Slag Cement," "Waterproof Concrete," "Cement Containing Additions of Finely Ground Material," "Economics of the World's Supply of Iron," "The Life of Iron and Steel Structures," "The Employment of Special Steel in Engineering Construction," "The Place of Copper in the Present Engineering Field, and the Economics of the World's Supply Thereof," "Alloys and Their Use in Engineering Construction," "Aluminum in Engineering Construction," "The Influence of the Testing of Materials Upon Advances in the Designing of Engineering Structures and Machines," "Cement Testing," "Testing of Metals," "Testing Fill-Sizes Members," "Proof Testing of Structures." The papers to be presented from the United States have already been arranged for from the recognized authorities on the various topics. Arrangements for the papers from foreign authors are being rapidly concluded and the aggregation of papers which will be presented will constitute a broad review of the field and be of the highest value.

Splendid Restaurant

Architect G. A. Lansburgh, of San Francisco, has been commissioned to prepare plans for one of the finest restaurants on the Pacific Coast. It will occupy part of the building now leased by the D. Samuels Lace House at O'Farrell and Stockton streets, San Francisco.

Architects for Palo Alto School

Messrs. Allison & Allison of Los Angeles have been selected as the architects for the new high school building at Palo Alto, Santa Clara county, California. The building will cost more than $110,000.

Building For College of The Pacific

Architect W. J. Wythe of Oakland, has prepared plans for a $15,000 dining hall and dormitory building to replace the structure recently burned at the College of the Pacific, near San Jose.

Competitive Drawings Rejected

The board of supervisors of Yavapai County, Prescott, Arizona, have rejected all plans submitted in competition for the new court house to be erected at Prescott, under the recent bond issue of $250,000. Thirteen sets of plans were submitted by architects from all sections of the country. The supervisors have been unable to dispose of the bond issue and announce another competition will be held as soon as the bonds are sold.

Improving With Every Issue

Publishers The Architect and Engineer,
San Francisco, Cal.

Gentlemen:—Inclosed find check in payment of my subscription. Can say that I like the magazine very much. It seems to be improving with every issue. Hope before long to be able to congratulate you in person on your success in bringing the magazine to the front.

MARK HAY, Architect.
Annawan, Ill.

Church Contract Let

Architects Ward & Blohme, Alaska Commercial building, San Francisco, have awarded a contract to F. Baumann, of 2000 45th street, Oakland for the construction of a new church for the Trinity Lutheran Parish at 17th Avenue and East 15th street. The cost will be about $15,000.

The same architects are preparing plans for an exhibit at the Panama-Pacific Exposition for the American Chicle Company.

Church Architect Dead

A dispatch from Chicago under date of December 2, says: James J. Egan, prominent as an architect of Roman Catholic churches in Pittsburg, San Francisco, Denver and many other cities, died here today. He was 75 years old.

James J. Egan drew the plans for St. Mary's cathedral, Van Ness avenue and O'Farrell street, which was dedicated in 1887.

Fresno State Normal School

Bids are now being taken for the construction of the State Normal School group at Fresno, from plans by State Architect McDougall, Sacramento. The amount available is $370,000. The buildings will be two stories high and constructed of steel and brick, with tile roof. Bids are to be opened early in January.

Personal

Walter Parker, formerly of Parker & Kenyon, is now a member of the office staff of Architect August G. Headman, Call building, San Francisco.

Personal

Franz Harding, a distinguished landscape architect of Switzerland is in San Francisco and may locate in the city permanently. Mr. Harding has done some splendid things in Swiss architecture and one of his quaint look-out towers in the world-famous Alps will be shown in colors in this magazine in a future issue. Mr. Harding is temporarily residing at 1510 Ellis Street. Architects desiring landscape work or suggestions in Swiss chalet planning or interior decoration would do well to consult with him.

Southern California Chapter of the American Institute of Architects has ratified the action of the board of directors of the Institute in recommending Mr. Fernand Parmentier, secretary of the chapter, for a Fellowship in the Institute. Mr. Parmentier was elected a Fellow by the Institute at its convention in Washington, D. C., this month. He is now serving as a volunteer with the French army in Alsace.

Henry C. Heynemann, who was arrested as a British spy in Germany, condemned to death and later liberated, was married in Madrid, October 27, to Mlle. Florence Lacaze, a San Francisco girl. Heynemann will take up architecture in San Francisco. He went to Europe to study his profession at the Beaux Arts school. He is a student of the University of Pennsylvania.

Architect John Galen Howard, whose work will be shown in the January number of The Architect and Engineer, attended the American Institute of Architects convention at Washington, D. C., and as a Fellow of the Institute, joined the Coast delegation in its efforts to bring the convention to California next year.

Mr. Warren Charles Perry, architect, formerly with John Galen Howard, announces that he has opened an office in the Atlas building, 604 Mission street, San Francisco, where he will practice his profession.

Architects G. Alex. Wright and George Rushforth have moved their offices from 571 California Street to the E. W. Hopkins Building, 354 Pine Street, San Francisco.

Architect Phillip Schwerdt has moved his office from the Phelan building to his residence address, 726 Clement street, San Francisco.

New Hotel For San Jose

Plans have been prepared by Architect Frank D. Wolfe, Bank of Italy building, San Jose, for the construction of a two-story and basement store and hotel building on Market street opposite the Hall of Records. Structure will be 65x100 feet, of brick construction. There will be stores on the ground floor with rooms for hotel purposes above.

Working Committees of Southern California Chapter, A. I. A.

President Albert C. Martin, of Southern California Chapter of the American Institute of Architects, has appointed the following committees to serve during the ensuing year:

Membership—John P. Krempel, chairman; Julius W. Krause and H. F. Withey.

Entertainment—Octavius Morgan, chairman; R. D. Farquhar, A. F. Rosenheim, John P. Krempel and Aleck E. Curlett.

A. I. A. Sub-committee on Public Information—Elmer Grey, chairman; Homer W. Glidden and Walter E. Erkes.

A. I. A. Sub-committee on Competitions—Myron Hunt, chairman; W. C. Pennell and Frank L. Stiff.

Permanent Committee on Legislation—Frank D. Hudson, chairman; J. J. Backus and Lyman Farwell.

Ethics and Practice—J. E. Allison, chairman; O. W. Morgan, Jr., and Percy A. Eisen.

A. I. A. Sub-committee on Education—Charles Greene, chairman; John T. Vawter, J. C. Hillman, and D. C. Allison.

City Planning—John C. Austin, chairman; D. C. Allison and Elmer Grey.

Contracts and Specifications—George E. Bergstrom, chairman; A. M. Edelman and S. Tilden Norton.

Pomona Architect Busy

Architect C. E. Wolfe, State Bank building, Pomona, has quite a little important work under way. Writing to the Architect and Engineer under date of November 19th, he says:

I have just completed plans for a garage for Elmer E. Booth. It is one story, 55 x 130 ft., and will be built either of brick or concrete, which will be determined when bids are opened. There will be steel trusses and iron roof, cement floor, work room, wash rack, ladies' waiting room, offices and all necessary conveniences.

Plans have been completed for a two-story garage for L. A. Lorbeer. This will be built of brick and will contain offices, show room, supply room, work room and an elevator 8 x 16 feet. The building will be 65 x 90 feet. The second story will be used in connection with the garage. Cement floor in first story and double floor in second story. The first story will be in gray pressed brick and second story of brown brick.

Largest Moving Picture Theatre on the Coast

Architect C. W. Dickey, Central Bank building, Oakland, is preparing working drawings for the largest motion picture theatre on the Pacific Coast. It will be erected on Franklin, near 15th street, Oakland, for the McPike family and will seat 3300 persons. Construction will be steel frame and brick walls. There will be stores on the Franklin street frontage. The estimated cost is $90,000.

Should Consult an Engineer

Editor The Architect and Engineer:

Kindly give formula for figuring a concrete beam freely supported, uniform load of 200 lbs. foot, 20-ft. span. Please show the work of calculation; also for a concentrated load. I find it difficult to understand from the formulæ in the catalogues.

Respectfully,
MEMBER S. F. A. C.

Any formula we might publish, if used by a person not familiar with theories of construction, would be dangerous and we therefore suggest that our correspondent consult a competent structural engineer. —Editor.

NEW HOME OF THE HENRY COWELL LIME & CEMENT COMPANY, FOOT OF MARKET STREET, SAN FRANCISCO

New Home of Henry Cowell Lime and Cement Company

The Henry Cowell Lime and Cement Company have recently moved into their convenient and attractive new building at the foot of Market street, San Francisco. The business and the executive offices of the company occupy the entire upper floor of the building. Just fifty years ago the business of this company was founded by Henry Cowell and has steadily grown to its present well-known strength and magnitude.

Six years ago the immense 4000 barrel cement mill at Cowell, Cal., pronounced by engineers one of the finest cement plants in the country, was built for the manufacture of the well-known Mt. Diablo brand of cement, and the mill has been run to its capacity almost incessantly since the date of completion. The company maintains agencies and warehouses in all the large cities on the Pacific Coast.

The Temple of Products

By BRUCE HARLAND.

The extensive and artistic exhibit of W. P. Fuller & Co., paint manufacturers, bears this striking name which, also, aptly describes it. It is important enough to be a "feature" by itself and it will be included in every list of leading attractions at the Exposition.

The exhibit is enclosed in a space 50 x 123 feet, containing besides the Temple, a complete miniature white lead factory (showing all the processes of making Pioneer White Lead, from the melting stage to the refined product), also a series or group of cottages forming a Residential Section, showing the use of the Fuller materials as applied in exterior and interior decoration.

The "Temple of Products" is a spherical building of 47 feet in diameter. The interior is a show room divided into ten alcoves, each forming a separate exhibit, as follows:

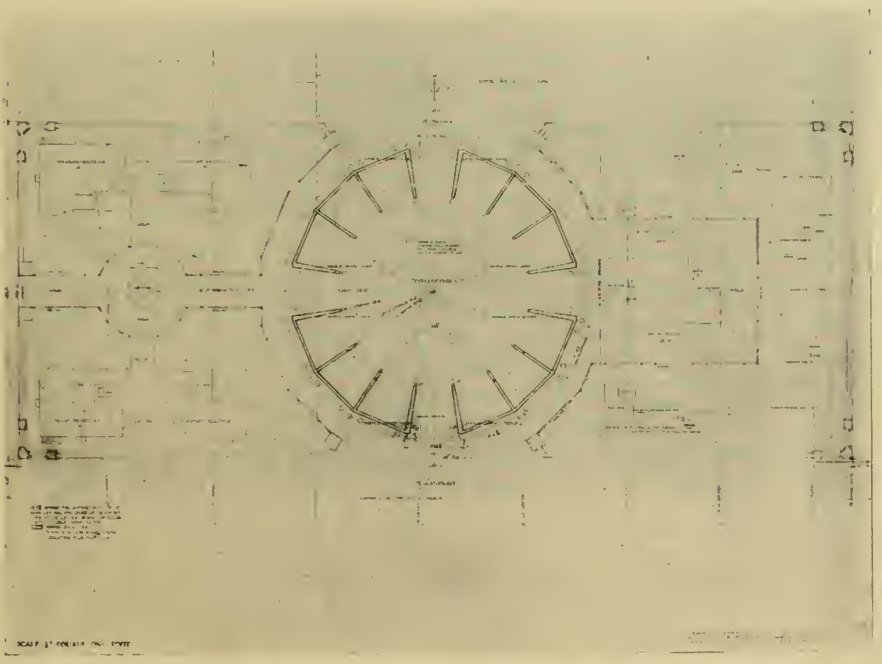
1. Farm scene, showing use of paints on barns, fences, etc.
2. Brush exhibit.
3. Varnish exhibit.
4. Interior finishes for homes, including paints, stains, varnishes, floor waxes, etc.
5. Marine exhibit.
6. Automobile and wagon exhibit.
7. Model kitchens—showing enamels, flat finishes, etc.
8. Hardwood panelings, showing varied treatments for the several woods.
9. Complete miniature home.
10. Furniture and material exhibit.

The Temple is a marvel of color and decoration, every part being of special pattern mostly in stucco, carrying out the Moorish design of the whole. The hundred or more columns form a labyrinth of color and the interior effect will be especially marked when illuminated by the concealed lights which have been installed in great profusion.

We should not forget to mention the miniature park, with the fountain designed by Leo Lentelle, of New York city.

Mr. Louis C. Mullgardt is the architect and he is indeed a creator of an original exhibit which has so enlisted his enthusiasm that he has worked out every detail along unusual lines, making the entire demonstration one which is as unique as it is artistic and interesting. The cost is approximately $50,000.

FRONT ELEVATION, TEMPLE OF PRODUCTS FOR W. P. FULLER & COMPANY
Louis C. Mullgardt, Architect



GROUND PLAN, TEMPLE OF PRODUCTS
Louis C. Mullgardt, Architect

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

The Drainage of Dirt Roads

AFTER all our tumult and shouting over the grading and paving of highways, after the construction of trunk lines of hard-metaled roadway from the Atlantic to the Pacific and from the Lakes to the Gulf, the fact will remain that by far the greater portion of the road mileage of the United States is such as can be produced by the use of the natural soil of the region, more or less adequately graded and drained, according to the resources and progressiveness of the community

The permanent improvement of all of the roads in the country would require expenditures so great as to be wholly impossible at the present time; and such a consummation ranks with Civil Service Reform and the Millenium among the bright and irridescent dreams of the future. The practical question for the present and for many years to come is how best to treat our sand-clay and dirt roads so as to secure from them the greatest measure of service.

The wisdom of securing the best engineering talent available in laying out or extensively repairing these roads has been shown beyond all question by the lessons of experience.

W. H. Bisbee in Indiana Farmer writes as follows:

Drainage is the principal feature which distinguishes a highway of any sort from a mere track through the woods and fields. The very word *highway* implies a road which is raised above the surrounding land in order that the water may be drained away. All famous road-builders achieved their success largely through their ability to devise practical ways and means for the disposal of surplus water.

The side drains of dirt roads present few difficulties. They are usually sufficiently formed by the plow and the grader, with a small amount of labor with hand tools. The principal thing to be borne in mind is the necessity of providing frequent outlets, and not allowing the water to flow for long distances by the side of the road. The increasing volume which is the result of a lack of a sufficient number of outlets will sometimes seriously wear the sides of the gutters, and endanger the roadbed itself.

The drainage which must cross the line of the roadway is a much more serious problem. Bridges of sufficient size must of course be provided for permanent streams, and these should, if possible, be constructed of some material more permanent and satisfactory than wood. Fifty years ago, with the then prevailing low prices and abundant supply of lumber, it was probably true that it constituted a fairly economical material for bridges and culverts, but the conditions of today demand something that is both stronger and more permanent.

Corrugated iron is a practical material for the pipe culverts and for all save the largest bridges. It is immensely strong, and has an elasticity or toughness which adapts it for rough-and-ready situations, like those of the dirt road. As a result of its corrugated form it has just enough of *give* to enable it to dispense with perfectly solid foundations and to withstand freezing and thawing and other conditions which are so fatal to rigid forms of pipe or to masonry. Bulletin Number 45 and other publications of the United States Office of Public Roads have pointed out the availability of this construction, though they lay considerable stress on the importance of the use of pure iron. Investigations carried out under the direction of the Department of Agriculture about ten years ago established the fact that the principal cause of rusting in iron and steel is the impurities which it contains. It has been frequently shown that the iron of a hundred years ago, which was so remarkably resistant to rust, was of a high degree of purity; and it is now quite generally acknowledged that iron is valuable for use in exposed situations in proportion to the success attained in the processes of manufacture in getting rid of foreign substances.

Cast iron pipe makes an excellent culvert, and the thickness of its walls generally protects it for long periods from destruction by rust. The difficulties in the way of its use are its generally high cost and the fact that its great weight makes it cumbersome to handle and install. Many of these pipes are giving very good service, but a lighter and more convenient form is appropriate to country roads.

Whatever form of pipe is selected, its installation should be given intelligent care. A smooth bed, of even slope, should be prepared, and this should be free from stones, either loose or embedded. The filling should be thoroughly tamped, up to nearly the top of the pipe, and large stones should not form a portion of the fill. In places where much water is to be cared for, and particularly if the slope is rather high, it is well to provide the culvert with wing walls of some sort to prevent damage to the fill at the inlet or outlet end. These bulkheads may be made of stone, of concrete, or of corrugated iron; but one of wood is far preferable to none, as its presence may, in time of freshet, save the whole roadway at that point from destruction.

Concrete Road Construction

THE national conference on concrete roads, which met in Chicago recently, adopted the following principles, or ten commandments, for concrete road work:

1. The aggregates should be clean and hard.
2. The sand should be coarse and well graded.
3. A rich mixture should be used.
4. The materials should be correctly proportioned.
5. The materials should be thoroughly mixed.
6. The inspection should be intelligent and thorough.

7. When in doubt, reinforce the pavement.

8. The subgrade should be of uniform density, thoroughly compacted and drenched with water immediately before placing concrete.

9. The concrete should be of a viscous, plastic consistency.

10. After placing, the concrete should be covered immediately, kept, moist, and not opened to traffic for four weeks.

Intelligent and honest inspection is needed in all public work, whether it is municipal, county, or federal. Both corporations and private interests have elaborate systems of inspection for all their work, whether done outside or inside of the plant.

Thoroughness of inspection, particularly in large cities, necessarily must be limited by the class and experience of the inspectors appointed. An engineer with much experience in dealing with contractors gave a definition of an ideal inspector as a "man who could read English, who was reasonably honest, and who could count up to ten." When the millenium arrives inspectors perhaps will be both honest and intelligent and also will possess a good working knowledge of the practical and technical points of the job they are inspecting.

Men inspecting pavements will not then be drawn from other departments and put on work which they know nothing about. It is said that one of the causes of the scandal in the New York state road department is directly traceable to the inspectors, many of whom were drawn from subway and aqueduct work to supervise road building.

Upon all road construction, and particularly in concrete, there should be two inspectors constantly "on the job." If it is necessary for both of them to leave the work, all construction should be suspended until their return. This might cost the taxpayer some money, but would be true economy in the long run.

The average citizen realizes the necessity for inspection is complex, when, as a matter of fact, it is comparatively simple and the chances of fraud can be eliminated. The citizen should know what he, as a taxpayer—and what the inspector, who is his representative—should look after to get his money's worth.

The first step in road building is a preparation of the foundation. Adequate drainage should be provided, all soft spots in the road should be filled, and preliminary grading should be done. Then the road should be rolled with a five or ten ton road roller.

For a concrete road the subgrade usually is rolled flat and not crowned, as for other road materials. The foundation having been prepared, the material, which is sand, gravel, and cement, is hauled on. The taxpayer would do well to examine material. If a standard grade of cement has been specified, he need not worry further about it. The cement is no magic material, however, and the road or concrete will be no stronger than the sand and gravel which is mixed with the cement. The taxpayer will do well to examine the sand and gravel.

The sand should be clean, coarse, and well graded, or varying in size from fine beach sand to little pebbles about one-quarter inch in diameter. Coarse material should predominate and the sand as well as the gravel should be free from dirt, clay, vegetable matter, or any other foreign substance, because these substances will prevent the cement mortar from "bonding," or completely surrounding every particle of sand and gravel.

The gravel or hard crushed stone should range in size from one-quarter of an inch to an inch and a half in diameter. Soft limestone should not be used, although hard limestone can be used successfully. Many engineers do not permit the use of limestone in any form as a wearing surface, so that if one-course work has been decided upon gravel or hard crushed stone must be used.

Assuming that the materials are all right, that the foundation has been properly prepared and good drainage provided—all of which should be a matter of careful attention by the citizens living on the street—the next step is the moving to the scene of a large concrete mixer.

When the concrete is being mixed, or manufactured, one inspector should be standing in front of the loading "skip," or carrier, at the back of the machine. The other inspector should be in front of the machine to see that the concrete when coming out is of the proper consistency, that it is handled properly by the man who strikes off the concrete and by those who come afterwards and float or finish the surface.

The inspector at the back of the machine should see, first, that the specifications regarding the mixture are carried out. The standard mixture used on concrete road work is 1:2:3, which may be construed as one sack of cement (ninety-four pounds net), two parts, or two cubic feet, of coarse, clean sand up to one-fourth of an inch in size; and three parts, or three cubic feet, of clean, hard gravel or hard crushed stone from one-fourth inch to one inch in size.

Brick Apartments

George N. Hillwig 524 South Dittman street, Los Angeles, has purchased a lot 50x142 feet on East First street, near Cummings street, and contemplates the construction thereon of a three story brick apartment building to contain about eighty rooms. The plans will be prepared by Architect O. M. Warner, 220 Stimson building.

The Brick Road and Its Construction*

By JAMES M. McCLEARY

ALTHOUGH I am supposed to discuss only brick roads, I shall digress to the extent of expressing some opinions on that phase of our movement which has been termed the literary and oratorical side of road building.

The question of road building has been uppermost in the minds of the American people for several years. It has been discussed from every view point by the public and the press, until people in the remotest sections are familiar with the possibilities of improved roads. For arousing public interest, the literary and oratorical forces should receive commendation. They would be subject to less criticism if they rested with this accomplishment. But, having convinced the public of the need of improved roads they have "wished on themselves" the further function of telling Mr. Taxpayer what kind of roads to build.

There enters at this point the subtle press agent for certain material concerns. Under his guidance, good road leaders have rushed into print with astonishing statements. Certain types of road, they declare, should be relegated to the ash heap, owing to the advent of the automobile and kindred road destroyers. The knell of gravel and water bound macadam has thus been loudly sounded, according to the notion of the sounders and they proceed to attack the more modern types of road on the score of cost. Then they politely lead you to the main tent and show you the patented article, equal in quality and at a less expense.

The simpler types of improvement are not ready for the ash heap. Their place remains. In Ohio, for example, there are 88,000 miles of road, yet the most ambitious plan of county and inter-county market roads only contemplates the improvement of 9,000 miles. How are the remaining 79,000 miles of highway to be improved if not by inexpensive methods suited to their light travel?

With regard to cost for the more traveled roads, Frank R. Lander the dean of road builders in Ohio says: "cheap first cost in road building means nothing more than one of two things, ultimate high cost or complete loss." Cheapness most often stands for wasteful extravagance in the end and the adage that "whatever is worth doing is worth doing well" has a striking application to the subject of road building. Yet this false notion of cheapness has dominated to such an extent that engineers and road builders in Ohio can cite instances where money aggregating millions has been as good as thrown away in road improvements without producing any lasting results, unless to educate the public by experience that ultimate results are more to be desired than cheapness of construction.

All these remarks lead up to the question, "what is a good road?" Perhaps from egotism—perhaps from zeal—I wish to leave my criterion of a good road strongly entrenched in your mind, namely; a good road can be identified, not by its first cost, but by the amount expended upon it for repairs, proportioned to the traffic.

In entering into the main discussion of road building methods, I may be guilty of a somewhat negative treatment of the subject. Good specifications are obtainable and I have no adequate reason for making this paper a minute treatise of what to do. I may help you more by warning you what not to do, for a majority of the common errors are not of omission so much as commission.

In the matter of grading, I can pass the question of cuts, but a word about fills will not be amiss. Do not place too much trust in a fill which was partially made a generation or two ago. The older portion may be the more treacherous. Perhaps trees and brush were used in making the original fill. If they have decayed, the fill is in a honey-combed condition and likely to give way. The best method of locating voids is by puddling.

Enclose your sub-grade with temporary earth dikes two feet higher than the sub grade and divide it into compartments by similar cross dikes. Fill the compartments with water, one at a time, and weakness, if any, will shortly appear. The usual method of relying on a roller for compacting a fill is not nearly so efficacious. In my experience, not more than ten per cent of the fills could be properly compacted with a roller alone.

Don't fall into the error of thinking that the province of a roller is to produce a smooth even surface on the fill. Rolling, like puddling, ought to help in developing hidden weakness where more or different material is needed.

Don't undervalue the necessity of drainage. My rule has been to use it as a precaution in dry places and as a necessity in wet places.

Tile drainage is much better than ditch drainage, but don't place your longitudinal drain beneath the pavement where it is less efficacious in removing the water which the pavement sheds and where, also, it offers a source of back seepage in wet times which may keep the pavement moist and be responsible for shifting in the sand filler. The place for the longitudinal drain is below the gutter. Cross drains should be propor-

* Paper read before the Northwestern Road Congress, Milwaukee, Wis., October 28-31, 1914.

tioned in frequency to the nature of the soil and the character of the natural drainage. In some muddy places it may be necessary to lay them every ten or fifteen feet. In other places they will be unnecessary for a considerable interval. The essentials of my practice in under drainage have been: first, open tile; second, position below the frost line; third, the use of gravel or cinders in filling the trench.

One advantage of under drainage as compared with a longitudinal ditch, is the lessening of danger to traffic and the more level shoulder of earth that can be graded above an underground drain. Such a shoulder can be kept free from tall grass and weed by means of a mowing machine.

(*Concluded in the January number.*)

Los Angeles Chapter December Meeting

The Southern California Chapter of the American Institute of Architects held its December meeting at the Hollenbeck Cafe, President Albert C. Martin, presiding. A telegram sent by Octavius Morgan, director of the American Institute, from the convention at Washington, D. C., was read announcing the election of Mr. Fernand Parmentier to Fellowship in the Institute. Mr. Parmentier's name was presented to the convention for ratification by Mr. John Parkinson of Los Angeles, who attended the convention as a delegate of the Southern California Chapter. The telegram also stated that a special convention of the Institute would probably be held in Los Angeles some time during 1915 to consider questions of considerable importance to Coast architects.

The president announced that Charles Gordon and Richard C. Farrell had been elected to membership. Several other applications for membership have been received.

The committee on contracts and specifications recommended that the chapter co-operate with the Electrical Contractors and Dealers' Association in their endeavor to improve conditions in the electrical field and to raise the standard in this work. The proposition of the latter organization is to be placed before the Chapter in writing at the next meeting for final action.

The remainder of the evening was devoted to a discussion of the legislation which the Chapter should undertake to secure at the next session of the Legislature. The Act of 1901 governing the practice of architecture and the Law of 1872, pertaining to the selection of architects for public school buildings, were discussed at length.

The January 1915 number of the Architect and Engineer will show the work of John Galen Howard, F. A. I. A. A special article, descriptive of Mr. Howard's work, has been written by Mr. William C. Hayes.

Engineer's Part in Lighting a Building

A study of the requirements entering into the designing of the illumination, electrical wiring, plumbing, heating and ventilation of a modern building will show that the architect is relying more and more each day upon the services of the engineer. Owing to the vast amount of mechanical and electrical apparatus and systems now on the market, and to the rapid changes that are taking place, the engineer takes a very important place in the architectural world.

As proof of the above it may be mentioned that a number of important structures were erected during the last year, on which the services of Charles T. Phillips, consulting engineer, have been used by the architect. The new Masonic Hall, San Francisco, several theaters for the Pantages circuit, the two-million-dollar Oakland hotel, the Jacob Stern residence, Atherton, California, St. Ignatius' church, Wigwam theater, Branch Public Library, Y. M. I. building, Potrero hospital, Atlas hotel, and the remodeling of the Call building, San Francisco, the Knights of Columbus hall, San Mateo, and a large number of schools, apartment houses, hotels, private residences, etc.

Mr. Pratt Buys Golden Gate Brick Company's Stock

The Pratt Building Material Company, Hearst building, San Francisco, has purchased the stock of enamel brick, pressed brick and sandstone brick of the Golden Gate Brick Company and is offering some real bargains. C. F. Pratt was formerly manager of the brick company, which is now retiring from business. The Pratt Building Material Company is carrying on a splendid business, filling large orders for sand, gravel and other building materials in San Francisco and interior cities.

Prospective Warehouse

The Jackson Furniture Co., 14th and Clay Streets, Oakland, have bought a lot at 21st, Union and Poplar streets, Oakland, as a site for a new warehouse. The lot is 162x230 feet. The company's lease of its present warehouse near the 16th Street depot expires in 1916, and a new warehouse will be built for the use of the firm upon the expiration of the lease.

Steel and Concrete Contracts Awarded

Architect Houghton Sawyer has let the structural steel contract for the Morshead Apartments at California and Mason streets, San Francisco, to the Judson Iron Works, at $55 a ton. There will be 275 tons of steel used. Contract for the concrete work has been let to George Elder.

Prosperity Ahead!

"You can tell your readers that the worst of the business depression has passed and that San Francisco is going to have a dandy year in 1915."

This encouraging information was volunteered a representative of this magazine by a well-known banker whose institution is closely allied with the building interests of the state and has made more large loans for building purposes since the fire than any two banks on the Coast.

And we want to add that from other sources—most reliable ones, too—assurances of unprecedented prosperity have been given.

This talk about San Francisco being overbuilt is pure buncomb. Look around you and behold the vacant lots, then look again and see the crowded apartment houses. You can't get a decent apartment in San Francisco today, except you pay a fabulous rental. The city needs a lot of moderate priced apartments.

The railroads estimate that 11,000,000 people will come to the fair next year. Ten millions is a conservative estimate. Statistics show that from one to three per cent of visitors to a world's fair remain in the city permanently. In Chicago the record was 2 per cent. Say San Francisco will only get one per cent. That means a hundred thousand people that must be provided for. It means that we shall have to build more hotels, more apartment houses, more homes.

And besides this there is the Twin Peaks tunnel that is going to give employment to a lot of men and is going to require much material. Then there is the $1,000,000 municipal library, plans for which will be completed by Architect Kelham early in the year. The Tubercular hospital group will be erected next year at a cost of $500,000, and the new University hospital at the Affiliated Colleges, now being designed by Architect Hobart, is positively going ahead in 1915.

And the architects, building material concerns and contractors who have weathered the storm that is now fast dispelling, are the ones that will be doing business in San Francisco in years to come. The weak ones have been swallowed up by the tide of adversity.

Paper Mill for Los Angeles

The Givan Paper Mills Company, with offices in 237 Union Oil building Los Angeles, contemplates the establishment of a paper manufacturing plant. It is the intention of the newly organized company to construct a factory building, which, with equipment, is estimated to cost $175,000. Among the projectors are: Dr. Pockney French, Ben H. Smith, Frank G. Hickox, and Frank G. Tyrell.

The Judson Manufacturing Company

announces to the trade that it IS NOW OPERATING an

Open-Hearth Furnace

and is in a position to furnish MILD STEEL BARS, SMALL ANGLES and UNIVERSAL PLATES

in the same range of sizes as it has heretofore supplied in double refined Iron.

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TELEPHONE SUTTER 6060

U. S. Metal Products Company of the Pacific Coast Independent Concern

Because of a similarity of names the United States Metal Products Company of the Pacific Coast, a prosperous California corporation, with factories at San Francisco and Los Angeles, and agencies in all the prominent cities of the seven far Western States, has suffered considerable inconvenience through publication of the voluntary bankruptcy petition of the United States Metal Products Company of New York City, a Massachusetts corporation. The New York concern has no financial connection whatever with the California company, although it has handled some of the products of the United States Metal Products Company of New York under an agency arrangement.

Tenement Housing

Charles H. Cheney, of Hobart & Cheney, architects, San Francisco, and associate editor of the Architect and Engineer, is in the East studying the tenement and housing problems for the Commission of Immigration and Housing of California. He will confer with the leading experts, architects and engineers and study the result of their work in tenement improvement, cheap workingmen's houses and garden cities, for the purpose of applying what has been accomplished in the East to the congested tenement districts of California cities.

OREGON BUILDING, PANAMA PACIFIC EXPOSITION
FOULKES & HOGUE, Architects

FOSTER VOGT CO.

CONTRACTORS

CONCRETE FIRE-PROOFING AND
GENERAL BUILDING CONSTRUCTION

Contractors on

Oregon State Building
Indiana State Building
Canadian-Pac. R.R. Bldg.

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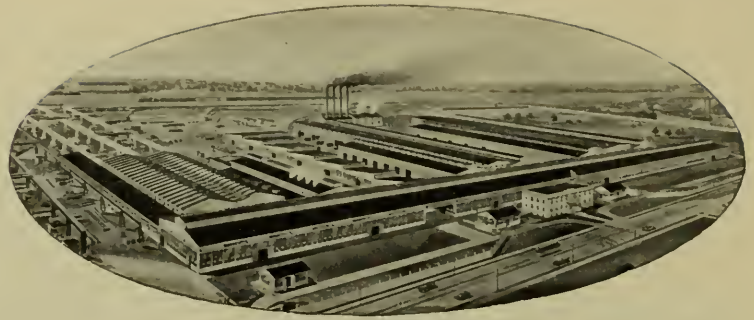

BIRD'S-EYE VIEW OF TRUSSED CONCRETE STEEL COMPANY'S PLANT, YOUNGSTOWN, OHIO

The Youngstown Plant of the Trussed Concrete Steel Company

THE extensive plant of the Trussed Concrete Steel Company at Youngstown, Ohio, is devoted exclusively to the manufacture of steel products, such as United Sash, Kahn trussed bars, Hy-Rib, Rib Lath, reinforcing steel and other building specialties. The waterproofing and finishing products of this company are manufactured in a separate plant in Detroit, while tile plants and warehouses are located in various cities of the country. The general and sales offices for steel products are in Youngstown, with representatives in all principal cities.

Six years ago only a few small buildings made up this entire plant. Today the factory and yards cover the greater part of twenty-five acres of land. The plant consists of an administration building, power plant, shipping yards, and a large number of individual buildings in which the various products are manufactured. In order to more clearly understand the development of this plant and its manufacturing divisions, it is well to review the products of the Trussed Concrete Steel Company and their development.

Originally the Kahn Trussed Bar was the principal product of the company. The Kahn Trussed Bar is a patented reinforcement for use in concrete girders, beams, joists and floors, and consists of a main horizontal bar with rigidly connected diagonal shear members, formed from the same section of steel. Other reinforcing products were introduced shortly afterwards. These included the Rib Bar with a specially rolled section, so formed as to secure a positive grip in the concrete; Rib Metal, an improved type of expanded metal, formed from a special section of steel and consisting of a series of bars, rigidly connected by cross ties; column hooping, completely built up, and collapsible for convenience in shipping, etc.

The next important development of the company was the invention of Hy-Rib, an entirely new type of reinforcement for concrete and plaster work. This material consists of a series of ribs in the same sheet of steel. The object of the ribs is to give stiffness to the reinforcement, so as to do away with forms when used in floors, roofs or walls, and to take the place of metal studs in partitions, siding, ceilings, etc. Coincident with the invention of Hy-Rib, Rib-Lath, an improved expanded metal lath, which is on the same general principle of hy-rib, was introduced, as well as rib-studs for hollow walls and partitions.

The most recent development in the growth of the plant is the manufacture of United Sash for use in windows, monitors, partitions, etc. This steel sash is built on an improved principle of assem-

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bling, which gives exceptional strength and efficiency to the construction of the sash. All types of sash are made, including standard pivoted side wall sash, vertical sliding sash, center pivoted and top hung continuous sash, steel and glass partitions, steel doors, etc.

Bearing in mind these facts and considering the necessary shipping yards, storage, stock rooms and receiving stations to handle this large and varied output, the reader will be able to understand the plan of the factory. At the extreme left of the bird's-eye view is shown a portion of the shipping yards for the Kahn Bars and reinforcing steel, containing large cranes, stock yards, cut-off presses, etc. The shearing of the Kahn Bars is done in an adjoining building. Here are found presses weighing twenty-five tons apiece, and with a capacity of two hundred and fifty tons for forming the rigidly connected shear members of the Kahn Bars. The dies for shearing these Kahn Bars weigh about five thousand pounds apiece.

The Rib Bar department is in close conjunction with the Kahn Bars, and is completely equipped with shearing presses, bending machines, locomotive cranes, etc., to supply the Rib Bars in any form desired. The column hooping is manufactured also at this part of the plant. The Rib-Metal material reaches the shop in the form of a wash-board shaped section, which is run through punches of three hundred ton capacity, and is then expanded into the finished material.

The building for the Hy-Rib and Rib-Lath manufacture are the next adjoining and are provided with railroad siding, loading platforms, etc., for shipping purposes. In these buildings the flat sheet of steel are first especially prepared, beaded, trimmed and made ready for the punching press, which with special dies cuts the material as desired. The sheets next go to the heavy forming presses, which by a process of pressing and expanding develops the product into its finished form. The Hy-Rib material is also furnished by the shops in curved sheets, the curving being done with special bending machines.

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The United Sash department includes a large number of buildings, owing to the great demand for this product, and the amount of space necessary for its manufacture. In this department steel sash sections are combined under powerful presses into the finished sash. Practically the entire sash is machine-built, the joints, etc., being finished with pneumatic hammers. The presses used have a capacity of four hundred and fifty tons pressure, and weigh a hundred and twenty thousand pounds each. The processes of manufacturing require an extensive series of presses for notching, shearing and assembling, besides many other finishing machines.

In the Floredome and Floretyle division, which is one of the recent developments, are manufactured deeply corrugated steel

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domes and tyle for use in floor construction in place of terra cotta tile. These are pressed out under special dies and powerful presses to the desired form.

The machine shop in conjunction with the plant is completely equipped to manufacture all the various dies and tools necessary for the manufacture of the Kahn building products. Many of these dies are very complicated, consisting of as many as a hundred pieces with eight different cutting edges. To insure the accuracy of the finished products, these dies must be ground to a ten-thousandth of an inch fineness.

The power plant is located in the rear, and the administration building, containing order department drafting rooms and shop offices is located in the front. Special time office buildings and garages are also indicated in the front. Complete switching and shipping facilities are provided and connected directly with the main line of the railroad, so as to handle the incoming and out-going material in the shortest time possible.

The general construction of the buildings is along the most modern ideas of fireproof and daylighted factories. Practically the entire side walls are made of united sash with a small curtain wall underneath of hy-rib concrete construction. The buildings are constructed with long span trusses, so as to give the greatest convenience in handling material, while the roofs are built of hy-rib concrete. Many of the buildings are provided with monitors, which are equipped with continuous united sash.

Medusa Waterproofing

The Sandusky Portland Cement Company of Sandusky, Ohio, whose Medusa White Portland Cement is well known on the Pacific Coast, has recently published an attractive booklet describing Medusa waterproofing and containing a number of splendid half tone plates of buildings that have been treated with the Medusa product. Among the San Francisco buildings mentioned in the list are the Olympic Club, Joseph and M. J. Brandenstein buildings, Mechanics Bank, new German Hospital and the West Bank building. The Medusa products are handled in San Francisco and tributary country by the Building Material Company, Monadnock building. The manufacturers have the following to say about Medusa waterproofing:

Medusa waterproofing is a dry white powder and consists of fatty acids, chemically combined with lime. Owing to its extreme fineness it may easily be perfectly mixed with cement in the necessary proportions.

Medusa has now been on the market several years, is the original concrete waterproofing, patented in 1907, and has been used in every part of the world under every condition and in every character of construction in which Portland cement is used. The dry powder system of waterproofing is far superior to the use of any of the so-called waterproof compounds in liquid or paste form, as these are generally difficult to mix with water, and many of them are practically worthless as waterproofing substances.

As is usual in such cases, the extraordinary success of the Medusa waterproofing has led to a host of imitations and infringements. Medusa is of standard composition, containing 25 per cent of combined fatty acids, while other materials on the market of pretended value contain only 6 to 8 per cent, and therefore must be used in three or four times the quantity of our material to produce the same result. There are also some com-

ALFARATA RANCH SILO AND DAIRY, MERCED

ALFARATA RANCH DAIRY AND SILO, MERCED.
C. F. Wieland, Consulting Engineer.

This photo shows the concrete Silo and the dairy barns at the Alfarata ranch near Merced. This concrete Silo, which is made from the **Pratt Building Material Co.'s** washed gravel (a perfect mix), is 16 ft. x 53 ft. 6 in. over all.

There is a 10,000 gallon concrete water tank on top of the Silo and forms part of it. The Silo has a capacity of 220 tons of ensilage and was constructed with Wieland's steel forms, eliminating all carpenter work and cost of lumber.

The floors and side walls of the dairy barn were made of **Pratt Building Material Co.'s** washed gravel. Their address is Hearst Bldg., and they ship **sand, rock, and gravel by both boat or rail** from **Alameda, Contra Costa, Yuba, Placer, Monterey, Sonoma** and **Napa counties.**

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pounds on the market which contain no waterproofing substance whatever, and are, of course, absolute frauds. Permanent and thorough waterproofing effect can be secured only by chemical combination of fatty acids with alkaline earth bases, and this principle is fully covered by our patents.

Consumers are, of course, unable to determine the composition of the materials furnished for waterproofing, and substances containing only a very small percentage of actual waterproofing may give apparently good results at the start, but experiments have shown that for permanent results a material of the composition of Medusa waterproofing is necessary.

A trial will convince cement users that Medusa Waterproofing, in dry powdered form, is the only true preventive of dampness in concrete. The everlasting quality of its waterproofing effects is due to its being absolutely insoluble and unaffected by water even after years of contact. Permanent water-resisting qualities are obtained with less than one-fourth as much Medusa waterproofing as is required of other so-called waterproof compounds to produce an apparent and temporary effect. Medusa is specified by the most eminent architects and engineers in the United States and Europe, and is rapidly displacing the old-time paints and coatings formerly used to prevent the penetration of water into concrete.

Theatre, Stores and Apartments

H. J. Knauer, 441 Citizens National Bank building, Los Angeles, is preparing preliminary plans for a two-story brick store, theatre and apartment building to be erected at the southeast corner of Forty-first place and Vermont avenue, for H. A. Church, 1502 Algoma avenue. The building will contain a moving picture theatre seating about 300, three store rooms and two-five room flats on the ground floor. There will be nine apartments with private baths on the second floor.

Prospective Hotel

The object of the International Federation Hotel & Theatre Company, which has been incorporated under the laws of Arizona with a capital stock of $2,000,000. is stated by the promoters to be the erection of a large auditorium and theatre building in Los Angeles. The Company has not secured a site and no arrangements have yet been made to finance the project. The incorporators are: Samuel T. Dailey, Sheik H. T. Ben Mohammed, Monroe Johnson, Gerson F. Levy, Mary S. Houtz, Brigham J. Anderson and W. H. Washington, all of Los Angeles.

Brick Veneer Church

Robert H. Orr, 340 Van Nuys building, Los Angeles, is completing working plans and specifications for a frame and brick veneer church building to be erected at the corner of South Park avenue and Forty-second street for the South Park Christian Church.

Apartment House

Architects Rousseau & Rousseau have completed plans and taken figures for the construction of a three story frame apartment house on California street, west of Leavenworth, San Francisco, for the Gerard Investment Company. The estimated cost is $20 000.

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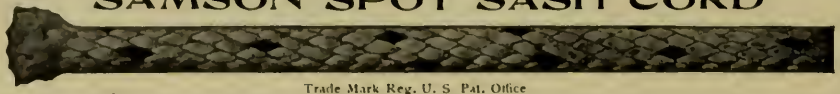

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Future Looks Good to Los Angeles Pressed Brick Company's President

Howard Frost, president of the Los Angeles Pressed Brick Company, predicts a good building year in Southern California in 1915. The worst of the dull spell has passed, he thinks, and cites the improved condition of the bond market as an indication of better times. Mr. Frost is not so optimistic about San Francisco, however. While he believes the city will enjoy greater prosperity in 1915 than in 1914 by reason of the many strangers that will come to the Exposition and thereby place money in circulation, he makes the argument that the city has built in anticipation of handling the crowds and there will be no immediate need of further large construction work.

However, Mr. Frost appreciates that San Francisco is growing steadily, and as long as this growth continues, there must be new buildings to accommodate the newcomers.

The Los Angeles Pressed Brick Company has enjoyed remarkable success in marketing its material in the last five years and to supply the orders which have extended throughout the coast it has been necessary to keep three large plants running to full capacity. One of these—the Northern California plant—is at Richmond, Contra Costa County.

The main plant, in Los Angeles, is now undergoing extensive repairs and the company will shortly put on the market a new face brick that President Frost says will make "'em sit up and take notice."

The company will show its confidence in the Panama-Pacific Exposition by having two exhibits—one in the Varied Industries building and the other in the California State building. The various clay products will be attractively shown at both exhibits and there will also be a pretentious display at the San Diego fair.

The Los Angeles Pressed Brick Company's exhibit in the Metropolitan building in Los Angeles has received much favorable comment. A feature is made of roofing tile, both the Spanish and Italian grades being shown; also Richmond quarry tiles, which are used very extensively for porches, terraces, etc. The company, by the way, has had a wonderful sale of its roofing tile in San Francisco and vicinity, due undoubtedly in a large measure to the quality of its product and to its aggressive northern distributors, the United Materials Co.

A Feat in Engineering

There has recently been completed an extremely difficult feat in engineering at North Transcona, Manitoba.

In October, 1913, a big concrete grain elevator, weighing 20,000 tons empty and 50,000 tons full, toppled over and rested at an angle of 27 degrees off plumb. The soft blue clay under the foundation had given way.

An engineer braced the big structure up, put seventy concrete pillars under it for a new foundation and jacked it into place. The structure is absolutely intact and the foundation is now much stronger than it was originally, as the pillars reach through the clay to bed rock.

Engineers say that the above was a harder task than would be the straightening of the leaning tower of Pisa.

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The War and The Heating Trade

Just what the effect of the European war is to be on American industries, especially the heating trade, has been a subject of anxious inquiry during the past month. While all reports agree that America must benefit in the long run from the war, it has not been so clear what were the immediate prospects and how long an interval must elapse before American industry could accommodate itself to the changed conditions. Taking the building construction figures as a criterion, it is undoubtedly true that many projected buildings will be held up until the financial atmosphere clears a bit. This refers to buildings whose erection can be postponed without special hardship to the builders. Other classes of buildings, such as schools, hospitals, etc., for which appropriations have already been made, will, for the most part, go forward as planned.

To offset the loss in general building construction, a brand new field will be opened up in the construction and equipment of manufacturing buildings to produce many of the materials that hitherto have been obtainable only from the warring nations and principally from Germany. American manufacturers have awakened with a jolt to a realization of the fact that many of their essential supplies, such as dyes in the woolen trade and certain acids in the chemical trade, are almost entirely imported and that the supply on hand is comparatively insignificant. This situation has already created a demand for the manufacture of such articles in this country and within the present month plans will be filed for the construction and equipment of new plants to engage in this class of manufacturing. How large this movement will be remains to be seen, but it may easily result in an extension of building construction that will more than offset the falling off in other classes of buildings.

The heating trade itself is to be envied in that it is almost wholly a domestic proposition and while it must feel the effect of any widespread derangement of business, it will be one of the first to benefit from the anticipated building boom.—Heating and Ventilating Magazine.

Some Recent Passenger Elevator Installations by Spencer Elevator Company

The Spencer Elevator Company of 126-128 Beale street, San Francisco, has recently completed a number of installations of both passenger and freight elevators, which indicates a growing confidence of architects and owners in the firm's ability to manufacture this type of elevators. Among the installations are the following:

One full automatic push button electric passenger machine in the Roeder building, Turk and Leavenworth streets, San Francisco; A. W. Burgren, architect.

One full automatic electric passenger car in the Sanderson sanitarium, Berkeley; W. E. Whalin, builder.

One full automatic push-button (alternating current) electric passenger elevator in the apartment house at Jackson and Locust streets, San Francisco; Milton Lichtenstein, architect.

One electric passenger elevator in the San Francisco Labor Temple; Mathew O'Brien, architect.

One hydraulic passenger elevator in the residence of Mr. William Hansen, Redwood City, Cal.

Two combination full automatic and lever control passenger elevators in the Gartland hotel at Geary and Larkin streets, San Francisco; Rousseau & Rousseau, architects.

Freight elevators in the Union Iron Works, Southern Pacific building at Floriston, Magnesia Asbestos Mfg. Co., Redwood City; Fred Kattner, Salinas, and Barton Estate building, from plans by O'Brien Bros.

Aviator To Build Home

Lincoln Beachy, the well-known aviator is to build a $8500. home in Forest Hill, San Francisco, from plans now being prepared by E. A. Larsen and D. C. Coleman, Merchants National Bank building, San Francisco.

BENNETT BROS.
Sargent's Building Hardware
514-516 Market Street, San Francisco, Cal.

Read This!

A recent number of Dependable Highways, a monthly publicity organ of the National Paving Brick Manufacturers, contains a view of the corner of Market and Post streets, San Francisco, with the Crocker building in the foreground. Beneath the cut is this startling caption: "A Section of Rebuilt San Francisco—Near the new Civic Center."

It is not necessary to comment on the "accuracy" of this statement, for any one at all familiar with San Francisco knows that the new Civic Center is a long ways from Market and Post streets.

Beneath the illustration of the Crocker building is the following article:

Because brick paving makes a more harmonious color scheme than any other form of paving, the architects in charge of San Francisco's new civic center have chosen it in preference to all other forms of street improvement.

The reddish hue of the vitrified brick will contrast with the greenery of the plaza, the gray granite of the City Hall, Municipal Auditorium and other civic center features. The paving alone will cost about $200,000.

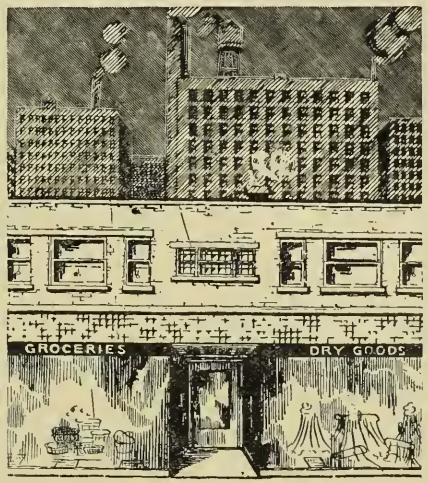
San Francisco is also planning to use vitrified brick for the improvement of a number of additional streets in its business and residence centers. Members of the engineering department are thoroughly familiar with proper methods of brick pavement construction and will employ the specifications recommended by the National Paving Brick Manufacturers' Association.

Dealers Too Lenient With Credits

"There's a bright side to the depression of the past few weeks," said R. M. Brockett, secretary of the Building Material Credit Association of Kansas City. "Material men are realizing that they were too lenient as to credits while building operations were large and expanding rapidly. They see now that even in the most prosperous times credits should be conservatively handled. When work starts up again, as it promises to do, material men will adopt more careful methods both as to the time of credits and as to the persons to whom granted.

"If any benefit is to come from this slack period it will be the elimination forever of the granting of promiscuous credit. When work was proceeding at a high rate of speed and there seemed plenty of contracts for everybody supply men felt sure of their money from contractors whom they were assured were reliable. When the pinch came, however, many of these reliable men were unable to meet their thirty and sixty-day bills—which, in fact, were current accounts—and the supply men had to carry them as well as the firms which had been accustomed to the long time bills. The Kansas City association will do its part towards establishing a sounder basis of credits."

[The same applies to Pacific Coast cities, especially San Francisco, where many a building material concern has suffered financially through failure of irresponsible contractors to make good their obligations.—Editor.]



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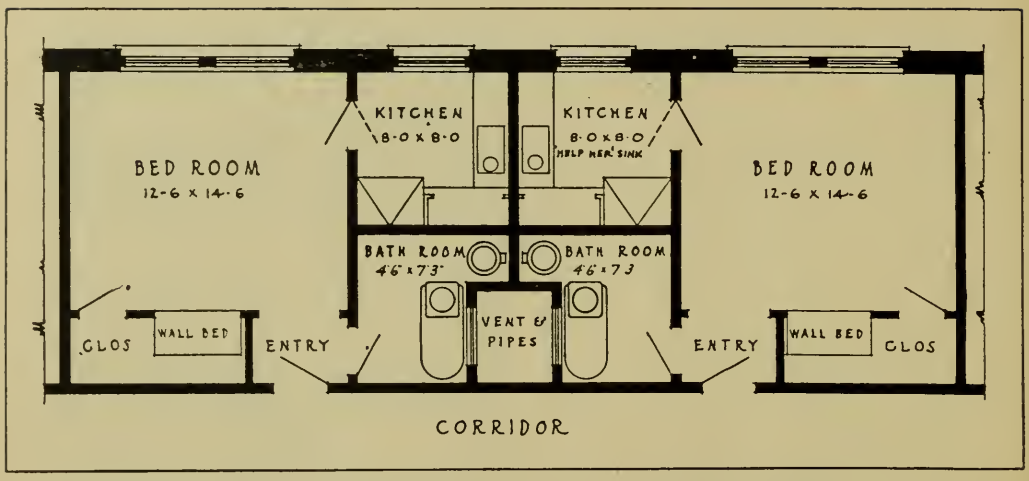

Unique Floor Plan For Hotel Apartments With "Boudoir" Bath Room Equipment

The Boudoir Bath

WHEN municipal health boards pass resolutions indorsing a thing and frame special ordinances providing for its use, there must be some merit to the article. And when architects specify it and insist that the plumber use it in preference to any other fixture, there must be a reason. Though the "Boudoir" bath fixture has been on the market little more than a year, its success has been little short of phenomenal. In that time Los Angeles alone has installed in various hotels, apartment houses and residences over 600 fixtures and orders are being filled now for almost as many more. Other cities, as far north as Seattle and south into Arizona, have showed their confidence in the article by placing orders for it.

The following letter from Sidney O'Neill & Co., 515 Lankershim building, and one of the largest property owners and apartment house builders in Los Angeles, gives some idea of the popularity of the fixture in the Southern city:

Los Angeles, Cal., Nov. 9, 1914.

Improved Sanitary Fixture Company,
411 Los Angeles Street,
Los Angeles, Cal.

Gentlemen:—When I first saw the circulars and illustrations of your "Boudoir" Bath and Lavatory Combination I was interested in the advantages and convenience claimed for it. After a critical examination of the fixture I was so well satisfied on all points that I placed an order for 87 of them which have been installed, 51 in my own buildings and the others in buildings I have erected for others.

As they have proven in every way satisfactory to the owners and tenants I am quite willing to say so. We are planning to use one hundred more in several other buildings and believe that anyone who ascertains their actual, additional convenience, good appearance in use as well as the advantages gained in construction, will reach the same conclusion in regard to them that I have.

Yours very truly,
A. S. O'NEIL.

Another contractor—a master plumber by the way, and the fact should not be overlooked that the strongest opposition to this new fixture has come from the plumbing houses, because it cuts down the "roughing in" charges, this contractor writes that by substituting the "Boudoir" for the old style fixtures, he was able to add two rooms on each floor, six rooms in all to his building. Where the owner is depending upon the income of every room this must appeal to him very strongly as no small saving. Continuing, the same plumber says: "With the Boudoir fixtures small bath rooms which are so generally used in hotels and apartments, may be made quite ample in appearance, and contain handsome tubs and lavatories of generous size, while under the old way, very small tubs and lavatories are used, and the bath rooms appear cramped and inconvenient. We feel these fixtures are a valuable addition to our property. Their operation is exceptionally clean and sanitary, and our guests like them better than the separate fixtures."

Another selling feature of the fixture is the fact that the wash basin is so firmly attached to the tub that it serves as a most convenient hold for the bather in getting in and out of the tub. There is a combination faucet which delivers hot and cold or mixed water to either tub or basin by a deflecting valve. All are attached to a single spigot. One can sit under the faucet and receive the spray of water over his shoulders and body with practically the same results as a shower. The fair sex are delighted with the arrangement for shampooing the hair and it is also an improvement over the old plan of using the basin or else the dirty

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water you have bathed in for washing the head and neck.

George Scott, the author, who has a cozy bungalow on Meridian street in Los Angeles, says he put the Boudoir bath tub in his home as an experiment and he is frank to say it has proved a genuine comfort. "I can't imagine anyone who has used this combination fixture ever being satisfied with the separate lavatory and bath fixtures," he says.

The plumbing trade throughout the Coast is now handling this fixture. Plans and full particulars may be obtained by addressing the Improved Sanitary Fixture Company, 411 South Los Angeles street, Los Angeles.

A California Industry With a Wide Field

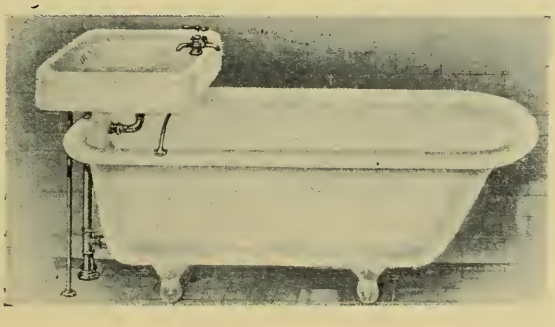
The business of the Union Blind and Ladder Co., of Oakland, California, manufacturers of vertical and horizontal coiling doors and rolling partitions, has a nation wide field. "Acme" rolling doors and partitions are well-known wherever their use is made necessary, as in Sunday school rooms, public school buildings, churches, auditoriums, Y. M. C. A. buildings, depots, garages, shops, etc. They are of especial benefit in hospitals where in X-ray rooms it is desired to exclude the light. The doors are also very convenient in garages, saving floor space and danger of accident from swinging doors.

The Company is filling orders for any number of doors, both vertical and horizontal, from Idaho, Kansas, Oklahoma, Tacoma, Colorado, Nevada City, Fresno, Corning and Los Angeles, besides the territory in and around Oakland. The Los Angeles order includes thirty-two doors for the new Bible Institute building now under construction. Messrs. Walker and Vawter being the architects.

Their factory and office is located at 3535 Peralta street, Oakland.

600 "Boudoir" Bath Fixtures in use in Los Angeles.

Specified by Discriminating Architects. Indorsed by Municipal Health Boards as one of the most Sanitary Bath Room Fixtures on the Market.



THE "BOUDOIR" BATH FIXTURE

Requires much LESS Room than the Antiquated Bath Tub and Wash Basin. Reduces your Plumbing Bill Very Materially.

Sold through the trade everywhere. Send for particulars, plans and testimonials.

Improved Sanitary Fixture Company

411 South Los Angeles Street, Los Angeles, Calif.

Current Prices of Building Materials

These quotations furnished by reliable San Francisco and Los Angeles dealers

(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $6.50 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $12.50 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.80 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 75c per ton, F. O. B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 11.50 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $14.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1, $35 per M; No. 2, $32; No. 3, $26.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $27 to $30.
Redwood, Rough Common, 1 x 4 and up, $22.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $22.00 to $24.00.
Redwood Rustic, No. 1, $36.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $32.00; No. 2, $28.00.
Redwood Shingles, No. 1, $2.80 full count.
Red Cedar Shingles, Star-A-Star, $3.00 full count.
Pine Lath, $250 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $120.00 per M; Select, $80.00 per M.
½ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $75.00 per M; Clear White, $105.00 per M.
White Lead in Oil, 8c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 65c gal. Raw Linseed Oil, 63c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $45.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $17.00 to $19.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21.00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31.00.
Redwood, Rough Common, $20.00 to $24.00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1⅝ in. x 4 ft., $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 70c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 65c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

CHICO PRICES

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster, $14.00 per ton, ex whse.

NOTABLE DISPLAY BY UNIVERSAL PORTLAND CEMENT COMPANY AT PANAMA-PACIFIC EXPOSITION, SAN FRANCISCO

Universal Cement Exhibit at the Panama-Pacific International Exposition

PORTLAND cement made from blast furnaces is to be shown in its various stages of manufacture in the exhibit of the Universal Portland Cement Company at the Panama-Pacific International Exposition. The installation of the exhibit which is housed in the Palace of Mines and Metallurgy has been completed.

It is one of the most instructive and attractive exhibits to be found at the Exposition which has demanded of its exhibitors that they produce something of a constructive nature aside from the ordinary display features. The extraordinary growth of the reinforced concrete industry in the past few years has brought the making of cement into great prominence. Through the conversion of slag which has hitherto been practically a waste product, into a valuable building material, another step has been taken in the elimination of waste in manufacturing. The Universal Company is a subsidiary company of the United States Steel Corporation which is one of the largest single exhibitors at the Exposition.

This exhibit, while a part of the parent company's section, is distinct and occupies a commanding position in the southern portion of the building. The architecture is that of a series of concrete arches in the background. The front of the central part of the section is built to resemble the entrance to a factory, all done in concrete. Beautiful floral decorations in concrete troughs appear above the arches. Cement posts with tubular railings and velour drapings mark the boundary lines of the exhibit.

The exhibit is intended to typify the uses of cement on the farm, in the erection of factories, residences and bridges, the laying of streets, roads, walks, etc. In the archways to either side of the central portion of the exhibit are fine oil paintings illustrating the many and varied uses to which cement may be put and suggestive uses for architects.

The first sight to greet the eye on entering the section is a large-sized replica of the company's factory near Pittsburgh, Pa., and is an exact reproduction. It is a mechanical contrivance called a scenograph and is electrically operated. Trains of cars are seen moving back and forth in the foreground, slag cars are run out to the dumps and a large crane of the traveling bridge type is seen in action in the background. Everything in the scene is designed to give the appearance of active operation. The lighting effects have been well executed. Daytime and sunset effects appear and with the scenic background used, give a realistic touch to the view. As the sunset effects gradually appear in the sky, the interiors of the buildings are lighted up and the huge roller mills are seen in operation. The illusion is perfect and the picture is one to hold the eye.

HEATING
VENTILATION

Automatic Sprinkler Systems
FLOOR AND WALL TILING

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SHEET METAL WORK

SCOTT CO., Inc.
SUCCESSOR TO JOHN G. SUTTON CO.
243 MINNA STREET — SAN FRANCISCO

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HOME MANUFACTURING CO.
BANK, STORE AND OFFICE FITTINGS
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GURNEY TYPE TRACTION ELEVATORS
All Types Double and Single Worm Gear Freight and Passenger Elevators
186 Fifth Street — San Francisco, Cal.

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ESTABLISHED IN 1860
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Advisory Engineer and Manager of Building Operations.
Builder of Kern County Court House, Bakersfield, California.
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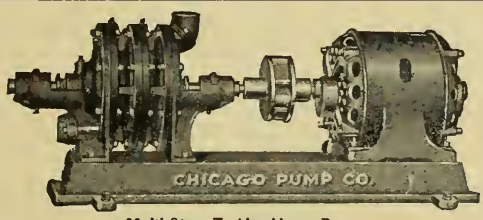
PORTLAND — SAN FRANCISCO — SEATTLE
Sound Construction and Engineering Co.
Incorporated
J. T. WALSH, Engr. and Mgr.
HEARST BUILDING, SAN FRANCISCO, CAL.

SLIDING DOOR HANGERS
FOR ALL CONDITIONS
THE McCABE HANGER MANUFACTURING CO., NEW YORK



Multi-Stage Turbine House Pump

Specify "Chicago"

Multi-Stage Turbine House Pumps
Single & Duplex Electric Sewage Ejectors
Automatic Electric Bilge Pumps
"Little Giant" Electric Cellar Drainers
Pneumatic Water Supply Systems
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A COMPLETE AND WELL DESIGNED LINE

General Offices and Factory
CHICAGO PUMP COMPANY
201 W. Lake Street, Chicago, Ill.

Pacific Coast Agents
TELEPHONE ELECTRIC EQUIPMENT CO.
612 Howard Street, San Francisco, Cal.

A large case shows Universal cement in its various stages of manufacture. The quarrying of the limestone is first shown. Then calcite, which is the limestone after it has gone through the crushing process. The slag, which is granulated, is then mixed with the calcite in tube mills. This mixture is calcined in rotary kilns at a temperature of 2500 to 2800 degrees Fahrenheit. Thence it goes to the clinker storage pits and then to the finishing mills, where are the automatic samplers, testing laboratories and where the sacks are filled and loaded into cars for shipment. Samples of the cement as it appears in the different processes of manufacture are shown.

Other features of interest in the exhibit are a reinforced concrete also as it is built for use on the farm; a seven-story building of fire-proof construction and showing a concrete fire escape, and a relief map of the United States showing the location of the company's plants and distributing stations. The furniture used in the exhibit is all of steel construction.

The exhibit, which shows careful planning throughout, has been installed by J. A. Race of the Universal company and under the supervision of Harry V. Jamison, director of exhibits for the United States Steel Corporation at the Panama-Pacific International Exposition.

Cleveland Man Enters New Field of Labor

Charles C. Chopp has recently severed his connection with the Glidden Varnish Co., of Cleveland, Ohio, resigning as a member of the Board of Directors, and Executive Committee, and as Purchasing Agent, and Manager of the Foreign Department. Mr. Chopp associated himself with the Glidden Varnish Co., about nine years ago, after spending seven years in a Banking House of prominence in Cleveland. Mr. Chopp began his new duties in the Executive Department of the Tropical Paint & Oil Co. of Cleveland, October 1.

The B. & W. Stationary Vacuum Cleaner

For Bungalows and Moderate Sized Houses

PRICE $100.00 INSTALLED

High efficiency and costs less than 3c per hou to operate. Made in San Francisco.

For demonstration see
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PHONE GARFIELD 7189

Mackenzie Roof Co.

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Phone Oakland 3461

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Structural Engineer

Designs and Details of
ALL CLASSES OF
METALLIC STRUCTURES

FOURTH FLOOR, CLUNIE BLDG.
California and Montgomery Sts.
SAN FRANCISCO, CALIFORNIA

Never a Fire or Explosion Possible

The Bowser Company, makers of the well-known Bowser gasoline tanks has just published an attractive booklet describing and illustrating its various machines. Two full pages are used to show photographs of San Francisco, before, during and after the earthquake and fire of April 18, 1906.

The Company's object in bringing this to the Architect's attention is to show the fire and explosion-proof qualities of Bowser Underground Gasoline Storage Systems, and the absolute safety derived from the use of Bowser equipment.

When you consider the enormous destruction of property, the fires which smouldered in places for days, and realize that 118 Bowser Underground Outfits went through this catastrophe and were found intact and their contents unmolested after the ruins had cooled, the question of the safest and most efficient method of storage for gasoline is settled once and for all. Further than this, Bowser Underground Gasoline Storage Systems have successfully withstood the severest fires in all parts of the country.

Hardly a day passes but that the press records instances where fires have been made more terrible because of inadequate above-ground handling of gasoline and oils. On the other hand, there has never been a fire or explosion traceable to a Bowser Outfit. Pumps have been literally melted to the base with no explosion of the liquid in the tank. This should prove conclusively that Bowser Equipment is fire and explosion proof. Bowser gasoline and oil storage equipment has been manufactured for over twenty-nine years and there are over a million systems of every kind in use throughout the world. The National Board of Fire Underwriters of the United States and the Licensing Boards of England and the Continent approve of Bowser Equipment.

Tuec Installations

The Tuec Company has received the contract for the vacuum cleaner in the Phoenix grammar school at Phoenix, Arizona, Norman F. Marsh, Los Angeles, architect. The residence of F. E. Engstrum of the F. O. Engstrum Company, now nearing completion, will also be equipped by the Tuec Company, as will the new fifteen-story Clift hotel on Geary street, San Francisco.

Two Residences

Architects Cunningham & Politeo, First National Bank building, San Francisco, have completed plans for two large modern residences to be erected at Presidio avenue and Jackson street, San Francisco, for Dr. James Edwards. They will cost about $10,000 each.

Kitchen Comfort

— is but one of the many advantages of "Quick as a Wink," Hot Water the "Pittsburg Way"—and especially so in hot, sultry weather.

Many people in your immediate vicinity, who are depending upon old fashioned water heating methods can be easily interested in a

"Pittsburg"

Automatic Gas Water Heater

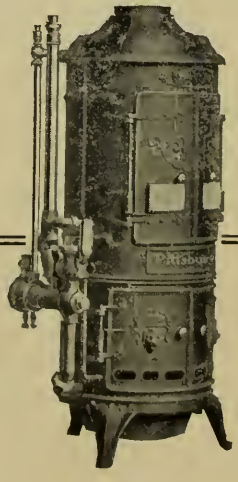
Desire for convenience actuates many water heater purchasers. Feature "Quick as a Wink," Hot Water the "Pittsburg Way" from the standpoint of convenience and sales will result with a minimum of effort and with pleasing frequency.

Write for our Business-Boosting Sales Plan

Pittsburg Water Heater Co.

Pittsburg, Pa.

237 Powell St. San Francisco



Type A. F. S. V. Pittsburg

Triply Controlled

A California Industry of Promise

(From Rock Products.)

C. W. Boynton, for many years the head of the inspection department of the Universal Portland Cement Company, at Chicago, has been actively interested for several months in organizing a company for the development of a very important magnesite deposit in California (near Livermore). He is in San Francisco at the present time, and there is every good business reason why such a concern operating upon a large scale should prove eminently successful. The only other commercially important deposit of pure magnesian carbonate is located in Austria and has been extensively operated by German and American capitalists, who have supplied the world's demands for this material for a number of years. With the closing of Austria's port of Trieste on account of the war, practically no shipments of raw magnesite or the calcined product have been shipped since July. The California deposit in which Mr. Boynton and his associates are interested is only about 150 miles from San Francisco and is a much more abundant supply than that in the Austrian Alps. Magnesite is extensively used in the production of the very highest grade of refractories, and the elusive values of Sorel cement offers a field for exploitation which may bring wonderful returns. * * *

Navy To Receive Bids On Big Lumber Order

Preparations are being made by the U. S. navy department for the purchase of a quantity of teak, bids for which will be opened at Manila and Washington April 8, 1915. The specifications call for delivery of 1,500,000 feet of teak logs and decking, the delivery to be made at Brooklyn and Norfolk not later than January 1, 1916, and at Manila by October 1, 1915.

Of the amount called for, some 525,000 feet will be required for the superdreadnaught California, to be built at the New York navy yard. The last purchase of this lumber by the navy was in 1892.

Berkeley School Architects Chosen

As a preliminary step in the construction of five new school buildings which will be erected in Berkeley, the advisory committee in charge of the work has chosen the five following architects to draft plans: W. H. Ratcliff, Jr., and James W. Plachek, Berkeley; Hobart & Cheney and Coxhead & Coxhead, San Francisco, and Walter D. Reed, Oakland. The fees, 6 per cent of the contract price, will acount to about $3,000 to each architect.

The Reason Why You Should Demand

The DAHLSTROM PRODUCTS

When Specified

The words "or equal" are entirely superfluous when used in connection with

The Dahlstrom Products

The true interpretation of "Dahlstrom Products or equal" permits of only one construction—DAHLSTROM PRODUCTS, because they have no equal.

The employment of the qualifying words "or equal" in specifications calling for Dahlstrom Hollow Metal Doors, Partitions, Trim, etc., is an injustice to both the products and the purchaser because it permits of the substitution of inferior goods. Often an unsuspecting owner or builder pays for something which is in no sense of the word on the plane of equality with THE DAHLSTROM PRODUCTS.

Quality commands its price, but better value than Dahlstrom Quality and Service cannot be had at any price. If you pay less it is a foregone conclusion that you will get less. We can show you why.

To specify the Dahlstrom Products, without the words "or equal," insures Quality, Service, Value and Satisfaction. It leaves no room for doubt, no chance for substitution.

Full information upon request.

DAHLSTROM METALLIC DOOR COMPANY

Executive Offices and Factories:

34 Blackstone Avenue
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Branches in All Principal Cities.

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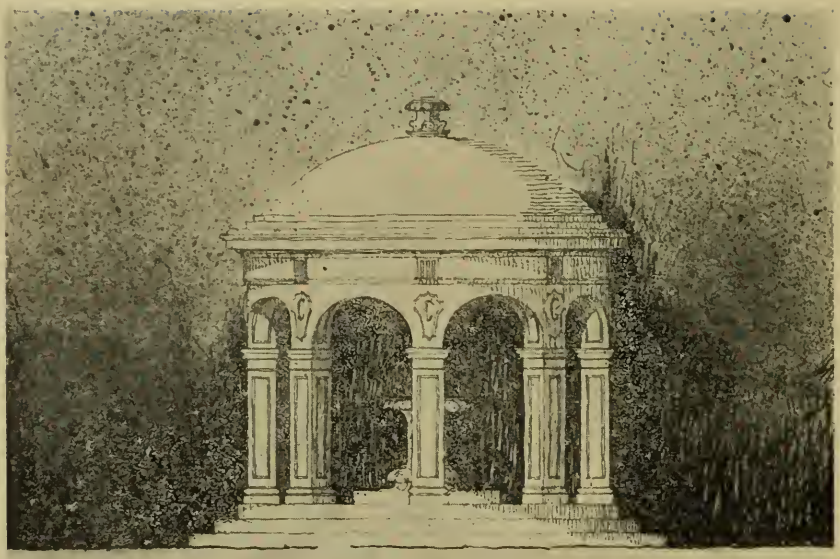
Drawings and Estimates Furnished



CERESIT COMPANY'S WATER TEMPLE AT PANAMA-PACIFIC EXPOSITION

Magnificent Temple of the Water God Aquarius

UNTIL quite recently it was believed to be impossible to make cement waterproof and although many announcements were made to the effect that a waterproof cement mixture had been invented, all fell down under the test.

The Ceresit Company, however, now claims to have a mixture of cement which is absolutely waterproof and has given some rather remarkable demonstrations of the efficiency of its material.

The most spectacular of these tests will be made in the Palace of Machinery at the Panama-Pacific International Exposition, where the company is erecting a beautiful temple of the Water God Aquarius.

The temple is surmounted by a spraying fountain and the waterjets will cover the dome and fall into a hidden gutter along the base of the top and then down the hollow supporting the columns. These are faced with glass on four sides so that the water passing down the cement tubes may be plainly seen.

The structure is composed entirely of the Ceresit mixture and the company claims that it will be able to prove to the millions of Exposition visitors that the cement is absolutely waterproof.

THE BIG-AN-LITTLE CONCRETE and MORTAR MIXER

Big Output — Little Weight
Big Profits — Little Cost
Capacity 35 Cu. Yds. a Day

All rounded surfaces—no corners for concrete to lodge in.
Revolves on ball thrust bearing, hermetically sealed to prevent grit from working in.
Equipped with levers for turning over and locking device to hold drum in place while mixing.

EDWARD R. BACON COMPANY
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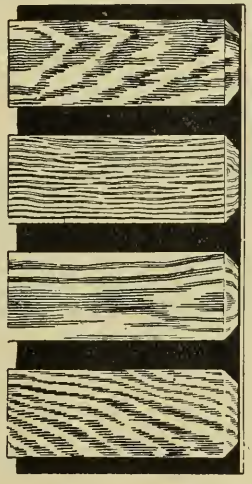
The ONLY Background that holds Exterior Plaster Permanently and Prevents Cracking



This shows the construction of stucco or plaster board—Dovetail Lath — damp proof mastic-fiber board.

BISHOPRIC STUCCO OR PLASTER BOARD

Made by the Central Door & Lumber Co., Portland

STUCCO BOARD—A non-staining spruce lath rigidly attached to a fiber board with damp proof mastic. ¶ Shrinkage Eliminated.

I. E. THAYER & CO.

110 Market Street,
San Francisco, Cal.

DISTRIBUTORS

BISHOPRIC WALL BOARD ALSO IN STOCK

House Heating with Electricity

Successfully Solved by

The PREMIER ELECTRIC SYSTEM of STEAM HEATING

The Modern Way of House Heating.
No Piping nor Expensive Equipment.
Heat When You Want It, Where You Want It.

Daily demonstrations showing the wonderful efficiency and the practicability of the Premier Electric System, illustrating how the heat is self-regulated and operates at a minimum of cost.

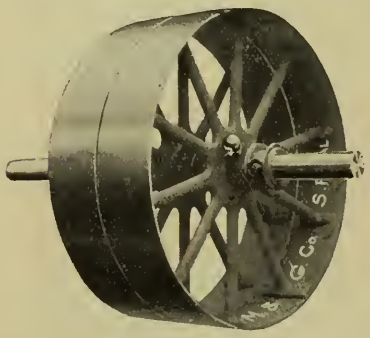
Houses can be heated by this system at a very low cost. There is absolutely no danger of any kind, nor is there any odor, dirt or waste.

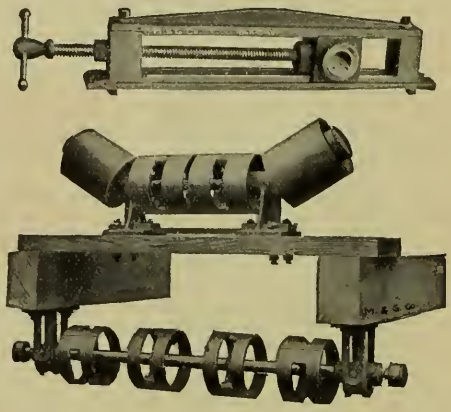
Architects, contractors, builders, owners or any one interested in the househeating problem, are invited to call and examine our system, or write for descriptive matter.

THE AUTOMATIC ELECTRIC HEATING CO.

(Incorporated)

Capitalized $200,000 **2330 Market St., San Francisco, Calif.**





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THE LARGEST FACTORY ON THE COAST,
THE MOST EXPERIENCE,
THE ABLEST ENGINEERS,
AND DESIGNS THAT STAND THE TEST.

Is there any reason why we should not figure on* YOUR *next plant?

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VANCOUVER, B. C.
Pacific Building

LOS ANGELES
130 N. Los Angeles St.

This Seems Too Much

(From The Improvement Bulletin.)

In a recent issue we tried to speak a good word in behalf of the kitchen—the room alleged to be neglected, if not hated and despised by many participants in modern enlightened life. We did not realize at the time that we were eloquent though we might have been, for to us the kitchen is a lovely place, whence those savory odors and real refreshments come that furnish the solid foundation for artistic souls.

But the evidence has come to us that the message of the kitchen was carried abroad with a quick and telling effect. The Milwaukee Evening Wisconsin, an old and highly reputable journal of Milwaukee, announces, "Another Innovation," in its issue of Nov. 5. "An apartment house," it says will be built at Lafayette and Summit, (an ultra fashionable district over-viewing Lake Michigan from high ground) which will feature the kitchens in front of the apartment and the family chambers in the rear.

This we think, is overdoing it.

Lack of Care in Preparing Bids

While lack of careful investigation of the actual conditions to be confronted on the work is a failing that is altogether too common with many contractors, the careless way in which bidding has been done of late on sewer construction in outlying districts has been made the subject for a special warning by the Los Angeles board of public works. In the older districts, where underground work has been conducted for many years even the most careless bidder has some general information to go by that will tell him about what he may expect to meet when he actually gets to work. But in the newer districts the condition of the material below ground, and the water conditions, are not as well known. Too many contracts in these sections have been taken of late without proper investigation, the successful bidder finding out afterwards that the presence of water not anticipated has raised his cost far above what he had expected.

"Bidders for sewer work proposed south of Slauson Ave. should use more care in submitting bids as it is probable that underground water will be encountered over this district," is the warning given by the public works board. This might also be applied to districts west of the city where in some sections the presence of underground water, frequently in large quantities, is proving a costly item.

The lack of proper investigation before submitting bids is without doubt one of the causes for the wholesale offering of astonishingly low bids on much public work of late, and this condition cannot be attributed entirely to the anxiety of many concractors to land a job.

While it is unquestionably not right to award a contract to the lowest bidder when it is morally certain his bid is far too low, what may be done to correct the evil of too low bidding, is not clear. It has been suggested in the east that the rule be changed and the award be made not to the lowest bidder, but to the second lowest in all cases. The problem is one meriting discussion by contractors' organizations as well as architects, engineers and public officials. Certainly a better method than that in vogue at present could be devised.—Southwest Contractor.

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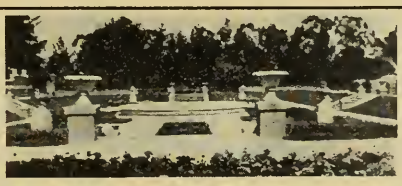

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For the cleaning of bricks in the walls of a church that had been blackened by coal smoke and which settled on the coping and washed down over the light-colored hydraulic pressed brick, and where dilute muriatic acid, pearline and other substances had been tried without satisfactory results, the Painters Magazine suggests the following: Muriatic acid will not remove smoke stains, nor will soda or soda ash do it. Smoke stains must be removed by scrubbing and rubbing with the proper solutions. Try the following method: Mix one gallon soft soap, two pounds powdered pumice and one pint of liquid ammonia, beating the mixture well. After carefully dusting the brickwork, apply the mixture. This should be in the form of a soft paste, in a fairly thick layer with a fibre brush, allowing it to remain for about twenty minutes; then rub it in on the bricks with a good, stiff scrubbing brush, using plenty of elbow-grease. Use a large sponge and plenty of lukewarm water to remove the lather, and then rinse with clear water, or, if convenient, use a hose for rinsing. This, if properly done, will remove the most stubborn case of discoloration by smoke from brick or stone.

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Opening Of Bids In Public

Anent the opening of bids in public, A. H. Shank, secretary of the Grand Rapids Builders' and Traders' Exchange, says in part:

"The widespread interest displayed by various building organizations throughout the United States on the question of opening bids in public, would indicate that conditions in the building business throughout the country demand a change of method.

"It is safe to say that no legitimate architect can advance any good reason for not letting his work publicly or at least of following a system whereby the different bidders would be acquainted with their position on the list and their competitors' prices at the time of opening of bids.

"The contractors in all lines are unanimously agreed that there is need of a change in the methods which have been in vogue for 20 years. As matters stand at present, the contractor bidding on private work spends his time and money in estimating the cost of a building, submits his bid and afterwards has no means of ascertaining his position on the list, as such information is rarely made public. Under a system of letter work by which the contractors would, at least, become acquainted with their positions on the list of bidders, the owner would in no way be injured, but would, on the contrary, be benefited. Under such a system the position of the architect would also be elevated by his being placed above suspicion.

"The United States government, the state government and municipalities in general open bids in public, reserving the right to reject any and all bids, and if this system is practical for government use, it should be practical for the private owner who is in the market to erect a building just the same as the government. The owner, however, has the advantage over the government in calling for bids in that he may select only those contractors whom he desires to figure on his building, whereas the government and municipalities must accept bids from any responsible bidder who is able to put up a certified check. It is therefore not to be expected that owners would present any serious objection to having their contracts let in open competition. The ethical tone of the building business is in need of elevation and the establishment of legitimate, open competition would certainly do much to eradicate the present inferior moral standard and financial depressions which causes the present clamor for different methods.

"There is a great deal which might be said upon this subject at this time which may well be left unsaid. One thing is certain, the contractors in all lines desire to see established more open competition, whereby a square deal will be accorded to all."

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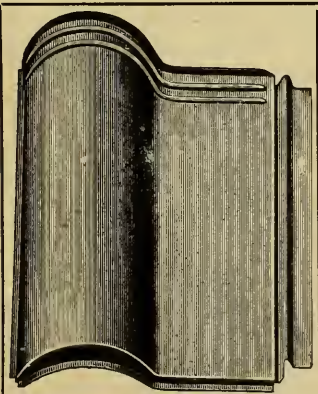

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